

Research Article - social sciences

Bringing the Forest Home: Lessons Learned during the COVID-19 Pandemic about E-Planning in Community Forestry Contexts

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Abstract

This paper examines “e-planning,” or the use of computer-based systems to conduct planning and decision-making, in the context of community forest management. E-planning is growing in the field of environmental planning, as it promises greater equity in terms of public participation. However, a lack of scholarly work exists on the applicability for forest planning. During the COVID-19 pandemic, county foresters and other natural resource professionals in Vermont turned to e-planning when safety restrictions limited their ability to engage in face-to-face efforts. This provided an opportunity to collect empirical data about the potential for e-planning to support the public engagement process in the context of forest planning. We provide an overview of e-planning theory and examine data from Vermont to explore the promise of e-planning for forest management. We make recommendations about the applicability of e-planning in the context of forest planning, and highlight areas for future research to investigate.

Study Implications: Public participation is an important component in the planning and management of public forestland. The use of e-planning, or the use of computer-based systems to conduct planning and decision-making, increased during the COVID-19 pandemic as a way to safely continue public participation efforts. Our paper suggests that e-planning may be a powerful tool for engaging both new and current stakeholders. However, we caution that there are challenges associated with e-planning, particularly issues related to technology and internet access. We encourage public land managers to consider whether e-planning is applicable to the communities they serve.

Keywords: e-planning, community forestry, forest planning, stakeholder engagement

Public participation has long been regarded as a critical component of the planning and management of public land, as it allows land managers to gather feedback from the stakeholders who are affected by planning and management decisions ([Wondolleck and Yaffee 2000](#), [Innes and Booher 2016](#)). However, involving the public in planning and management is not always easy. Contentious

situations can arise if there is disagreement between multiple stakeholder groups, land managers cannot satisfy all constituents, stakeholders struggle to understand the engagement process, or stakeholders feel unserved by the engagement process or perceive it to lack fairness and transparency, among many other challenges ([Cheng and Mattor 2006](#), [Coleman and Stern 2018](#)).

COVID-19 has presented a new challenge for public participation in that safety measures have limited face-to-face interactions (Milz and Gervich 2021). Yet many public participation processes that were ongoing when the COVID-19 pandemic began continued throughout the pandemic, shifting from in-person public participation strategies to virtual strategies known as e-planning. Proponents of e-planning argue it has benefits and advantages; however, until the COVID-19 pandemic, e-planning was not widespread in the context of forest planning and management. The rapid adoption of e-planning among county foresters in Vermont provided an opportunity to explore the opportunities and challenges associated with e-planning in the context of community forestry.

Public Participation in Forest Planning

Public involvement is a key component of natural resource planning, including forest planning (Beierle and Koniksy 2000, Cheng and Mattor 2006, Coleman and Stern 2018). Across federal, state, and local contexts, forest planning efforts on public land typically involve some level of public participation (Thompson et al. 2005, Leach 2006). The practice of public involvement in forest planning efforts dates back to at least 1969, when the National Environmental Policy Act (NEPA) set the requirement for federal agencies like the USDA Forest Service (USFS) to include the public in planning efforts (Gericke and Sullivan 1994). Over the years, the means of public participation have evolved from one-way flows of information such as public hearings and comment periods to surveys, public opinion polls, and, eventually, dialogue-based collaborative planning (Innes 1995, Wondolleck and Yaffee 2000, Innes and Booher 2016).

Although there has been a great deal of academic work that has examined what makes public participation successful in the context of national forest planning (e.g., Cheng and Mattor 2006, Coleman et al. 2018, Nie 2019, and many others), the topic is also relevant to forest planning at the local scale. In the state of Vermont, as well as more broadly across all of New England, there is a rich history of town-owned forests (McCullough 1995, McCullough 2015). In Vermont, these so-called “community forests” are unique forms of public land owned and managed by municipalities (Luneau 2019). Although these town forests are not beholden to national-level legislation such as NEPA, their role in the fabric of the Vermont community and the context in which the parcels were acquired by municipalities means that public participation is just as important as it is with national forest planning.

The Vermont Context

Vermont towns were granted the ability to acquire town lands through the Municipal Forest Act of 1915 (McCullough 2015). Several subsequent pieces of state legislation in the early and mid-1900s expanded support for community forests and provided funding for both for the acquisition and reforestation of these parcels (McCullough 2015). A now-defunct law from 1951 required towns in Vermont without a community forest to put the question of whether or not to acquire one in the warning¹ for their annual town meeting (Northern Forest Alliance 2008). Much of those early programs to provide financial support for community forests is no longer in existence, but the State of Vermont continues to provide support to community forests through its County Forester program. In Vermont, county foresters are state employees who advise private landowners on responsible management of their forests and provide support to municipalities in the management of community forests (Vermont Agency of Natural Resources 2021). According to Vermont Urban and Community Forestry (2021), Vermont is currently home to 168 community forests, each under the purview of a county forester.

Recently, a trend is emerging in the acquisition of new community forests: municipalities partner with a conservation organization to acquire a parcel of land and protect it with a conservation easement, sometimes with the help of jointly acquired grant dollars. For example, the Catamount Community Forest in Williston, Vermont, and Andrews Community Forest in Richmond, Vermont, were both purchased and conserved in 2018 with funds from the USFS Community Forest Program (Town of Williston 2018, Town of Richmond 2018). The acquisition of the Huntington Community Forest in Huntington, Vermont, is currently pending with funds from the USFS Community Forest Program (Town of Huntington 2021). The Maple Shade Town Forest in Westford, Vermont (acquired in 2018), the LaPlatte Headwaters Town Forest in Hinesburg, Vermont (acquired in 2007), and Preston Pond Conservation Area in Bolton, Vermont (acquired in 2003), were all purchased and conserved with funds from the Vermont Housing and Conservation Board, municipal conservation funds, and local land trusts (Town of Bolton 2017, Town of Hinesburg 2017, Town of Westford 2021). The acquisition and conservation of all these community forests was facilitated by significant technical assistance from the Vermont Land Trust and the Trust for Public Land.

Many of the conservation easements and grant awards mentioned above encourage or even mandate public participation in the creation of community forest management plans. For example, the USFS Community Forest Program required grant recipients to integrate public involvement into the development of community forest management plans (USDA Forest Service 2019). Public involvement within these planning processes varies widely, but usually entails site visits or walk-throughs, followed by meetings with steering committees consisting of a diverse group of stakeholders, public forums, comment periods, and surveys (Luneau 2019). These avenues for involvement hold a great deal of importance to community members and stakeholders, because community forests are multiuse lands in which many Vermonters recreate, hunt, log, or otherwise depend on.

Public Involvement, COVID-19, and the Emergences of E-Planning

Across the United States, numerous forest planning efforts were underway when the COVID-19 pandemic began and subsequently limited the ability to involve the public in planning via face-to-face efforts like collaborative dialogues. Some planning processes were halted, but many communities turned to e-planning; that is, the use of computers in planning (Klosterman 2012), to continue their work. A recent article published on the National Forest Foundation website details three planning efforts on national forests that continued online during the pandemic by using video-conferences, phone calls, virtual meetings, shared online resources, and online public comment processes (National Forest Foundation 2020). These planning efforts continue to accomplish milestones during the pandemic. As the article's author put it, "Just because in-person meetings had to pause, the work for our forests and communities didn't." The article goes on to explain that the move to e-planning had the added benefit of increasing public participation, "With no travel required, we saw an increase in participation in many of our virtual events and meetings." In short, the pandemic hastened the use of e-planning to support public participation in forest planning.

E-planning emerged as a field in the 1960s with federally funded attempts to develop urban models (Klosterman 2012). Technological advances throughout the following decades gave rise to the use of geographic information systems and other decision support systems in planning (Klosterman 2012). More recently, the use of information and communication

technology has been viewed as a way to more meaningfully disseminate information to the public, collect public comment, prioritize planning objectives, crowdsource ideas, and organize stakeholders (Milz and Gervich 2020). Proponents of e-planning argue it holds great potential to reach a wider range of participants than face-to-face planning efforts, resulting in greater access and subsequently more legitimate, socially sustainable outcomes (Conroy and Evans-Cowley 2010, Silva 2010, Aitken 2014).

While interest in e-planning has been growing for years, the COVID-19 Pandemic intensified that interest, as communities around the world were forced to limit face-to-face planning efforts for safety reasons (Milz and Gervich 2020). Much like the aforementioned planning efforts on national forests, community forest planning in Vermont saw a rapid move to e-planning during the COVID-19 pandemic. E-planning may provide new and improved opportunities for the public to participate in forest planning. However, questions remain about the challenges and opportunities associated with e-planning to support the public engagement process in the context of forest planning. To help begin to fill this knowledge gap, this article explores the use of e-planning in community forest planning in Vermont during the COVID-19 pandemic. We sought to explore the following questions:

1. Did county foresters in Vermont switch to e-planning during the COVID-19 pandemic?
 - a. What challenges did they experience?
 - b. What benefits did they see to e-planning?
2. How did stakeholders experience forest planning during COVID-19?
 - a. Did the adoption of e-planning change their participation levels?
 - b. What benefits did they associate with e-planning?
 - c. What challenges did they experience?

Results of our study offer useful insight about the use of e-planning to encourage public participation in forest planning at a municipal level and more broadly.

Methods

During the COVID-19 pandemic, county foresters and other natural resource professionals in Vermont turned to e-planning when restrictions limited their ability to engage in face-to-face community forest planning. This provided an opportunity to collect empirical data

about the challenges and opportunities associated with e-planning to support the public engagement process in the context of forest planning. We took a three-phased qualitative approach to mixed-methods data collection. Qualitative approaches to mixed-methods research involve integrating qualitative and quantitative data through a constructivist, rather than positivist, lens (Hesse-Biber 2010). Our study involved the following data collection and analysis: a case study of one community forest e-planning effort to provide depth in our exploration, a state-wide survey of all county foresters to provide breadth, and interviews with key informants to member-check our results.

In phase 1, we followed Yin (2009) and conducted a mixed-methods case study of a community forest transitioning to e-planning. The community forest we selected was in the midst of proposing a forest management plan (FMP) when the COVID-19 pandemic began, and the forester and town planning staff quickly mobilized to offer online outreach and education around the proposed plan. We conducted participant observations (Glesne 2016) of two webinars that were designed as outreach and education opportunities for community members interested in the proposed FMP. We recorded thick description (Glesne 2016), including detailed notes about participants, their engagement levels, and the questions that they asked. These notes were analyzed through iterative qualitative coding (Glesne 2016) using NVivo12 software. We additionally followed Dillman (2011) and administered a survey (henceforth “case study participant survey”) to webinar participants ($n = 300^2$) to gain information about their experience with forest planning before and during the COVID-19 pandemic as well as their opinions and perceptions of e-planning. Seventy-four individuals responded to our survey (response rate = 24.67%). Closed-ended questions were analyzed using descriptive statistics and open-ended responses were analyzed through iterative qualitative coding (Glesne 2016) using NVivo12 software.

In phase 2, we again followed Dillman (2011) to develop a second survey (henceforth “statewide forester survey”) to understand whether our observations from the case study were valid at the state level. We sent the survey to all county foresters in Vermont. We additionally used the snowball technique (Noy 2008) to identify natural resource professionals with whom county foresters partnered to deliver e-planning during the COVID-19 pandemic, and we sent the statewide forester survey to these individuals. The survey was sent to a total of 32 individuals, and

fourteen individuals completed the survey (response rate = 43.75%). Survey questions were designed to collect data about respondents’ use of e-planning prior to COVID-19, the strategies they used once the pandemic limited face-to-face outreach and education opportunities, the challenges they encountered, and the opportunities they saw for e-planning going forward. As with case study participant survey, the closed-ended questions were analyzed using descriptive statistics and open-ended responses were analyzed through iterative qualitative coding (Glesne 2016) using NVivo12 software.

Finally, in phase 3, we conducted semistructured follow-up interviews with three key survey respondents. We selected these respondents for follow-up surveys because they were uniquely able to speak to the experiences of multiple county foresters, as they acted as partners on e-planning projects across the state and could thus speak about trends broadly in Vermont. These interviews served as member-checking (Glesne 2016) and allowed us to present our findings, ask for clarification and feedback, and increased the validity of our results. All the interviews were transcribed using Otter.ai and analyzed through iterative qualitative coding (Glesne 2016) using NVivo12 software.

Results

Case Study

Data collected about our case study provides an example of how e-planning techniques were used to support town-forest planning in Vermont during the pandemic. In this case, the county forester had prepared an FMP for the community forest prior to the start of the COVID-19 pandemic. The FMP was posted on the town website for any interested parties to read. This was publicized locally and in a press release, which stated the existence of the FMP, the desire to solicit public input (and how to submit it), and where the draft FMP could be read. As explained in outreach material, the county forester’s goal was to create an open, transparent, and inclusive process so that the FMP was vetted by the public and incorporated public input before reaching the town select board, which held final responsibility for approving the FMP. Part of the outreach strategy for this FMP was to plan charismatic projects that would allow for active management and demonstration framed in a way that would engage a broader coalition of landowners, the general public, and conservation partners. To this end, two management activities were planned and described

in the FMP. The first was a noncommercial treatment funded by a federal program and designed in partnership with a land manager and a partner conservation organization, with a goal of creating early successional habitat and enhancing shrubland habitat for birds. The second project consisted of a commercial timber harvest on both the town-owned forest and adjacent university-owned lands, partnering with university researchers as part of a larger study of silviculture for climate adaptation and resilience.

COVID-19 reached Vermont just as the county forester was beginning the process of educating the public about the FMP and these two projects, so the county forester hosted two virtual events to both highlight the planned management projects and collect input on the FMP. The first partnered with a university researcher and discussed managing forests for carbon and climate adaptation, focusing on the climate adaptation project planned for the forest. The second partnered with natural resource professionals from a national nonprofit and a state agency and focused on forest birds and the forest bird habitat management practices planned at the forest. Finally, a web-based survey was created for webinar participants to collect respondents' thoughts and reactions to the content of the FMP.

Qualitative analysis of observation notes suggests the webinars were successful public engagement events. Observation of the two webinars revealed that attendance at both presentations reached the maximum capacity for the webinar platforms, demonstrating high participation in the events. Observations further revealed that participants were overwhelmingly engaged with the subject matter. The webinars were divided into time for presentation of information and time for questions and answers. During the question-and-answer session, participants asked thoughtful questions of the presenters (e.g., one participant asked, "what steps are being taken to address invasive forest pests?"), shared their concerns and hopes for the FMP (e.g., one participant expressed concerns about conflicts between hunters and mountain bikers), and described their personal experiences at the community forest (e.g., several participants noted that they are adjacent landowners who frequently birdwatch in the forest). In short, the webinars provided a successful opportunity for the county forester to provide information about the FMP to the public and allowed the public to ask questions and provide feedback to the county forester.

Results from the case study participant survey supports the notion that the e-planning efforts were successful in terms of public engagement. Results revealed

that roughly 42% (31 of 74) of respondents indicated that they had never participated in a forest planning event or workshop before participating in the webinar about the FMP in their town, meaning that both new and former stakeholders were reached via the online webinars (see [Figure 1](#)). Additionally, 100% of case study participant survey respondents indicated that they found the webinars enjoyable and 100% of case study participant survey respondents indicated that they found the webinars to be convenient. Roughly 95% (70 of 74) of respondents indicated that they found the webinars easy to access. When asked whether they would be more likely to attend in-person or online events about forest planning in the future, roughly 58% indicated that they would be more interested in in-person events, and 42% stated that they would be more likely to attend online events.

Overall, the county forester in this case experienced positive results with e-planning. The webinars reached new stakeholders that did not participate in forest planning prior to COVID-19 and reached previously engaged members of the public. Webinar participants demonstrated high levels of engagement during the online sessions and stated via surveys that they found the e-planning activities convenient and enjoyable.

Statewide Forester Survey

Results from the statewide forester survey demonstrate that the outcomes of our case study work are valid at the state level. Results suggest that, similar to the county forester in the case study above, many individuals working in community forest planning in Vermont quickly transitioned to e-planning when face-to-face events were deemed unsafe. Roughly 70% of our respondents (10 of 14 respondents) reported that they sought alternative means for engaging with the public and made use of e-planning strategies (see [Figure 2](#)). Similar to the case study we conducted, many respondents described webinars and online meetings as the primary means for which they sought to share information about community forest planning and management with the general public during the COVID-19 pandemic. As one survey respondent put it when asked to describe how they handled public engagement once the COVID-19 pandemic began, "Webinars. Lots of webinars. And Zoom meetings." Another respondent stated, "We moved to online programs and discussions through the use of Zoom." Other respondents mentioned similar platforms, such as Google Meet and Microsoft Teams. Although synchronous meetings over the internet appeared to be the most commonly



Figure 1. Number of stakeholders that participated in forest planning activities prior to COVID-19 and their perspectives on e-planning ($n = 74$).

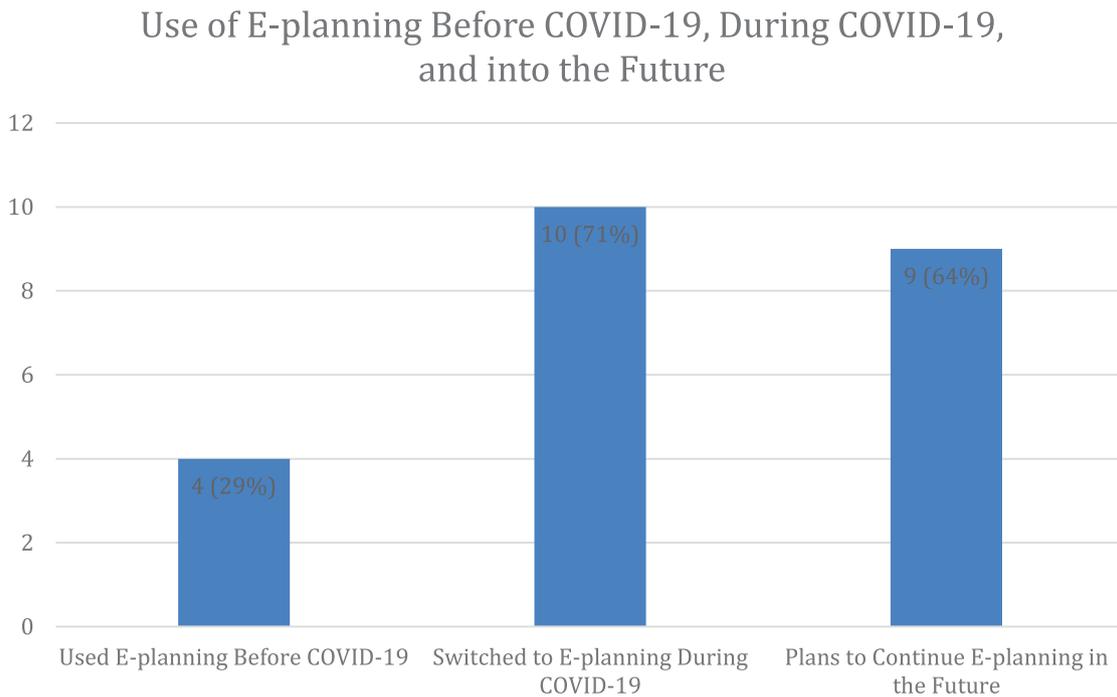


Figure 2. Number of county foresters and their partners who used e-planning prior to COVID-19, during COVID-19, and who plan to continue to use e-planning into the future ($n = 14$).

used strategy, a number of other strategies were also discussed in open-ended survey questions and in member-checking interviews, including the creation of

a YouTube channel, an ArcGIS StoryMap, the creation of social media pages, and the use of online surveys to solicit feedback.

Open-ended answers in the statewide forester survey revealed that, similar to the increase in new stakeholders in the case study above, the move to e-planning during the COVID-19 pandemic had a noticeable impact on public participation in community forest planning in Vermont. For example, one respondent stated, “I think I’m engaging a lot more people. It’s also useful to be able to record these events so that folks who aren’t able to attend (which there will always be some of) can watch them later.” Another respondent echoed that sentiment when they noted, “We have reached a greater audience, which will hopefully turn into better informed citizens.”

Our results suggest that many of the individuals surveyed and interviewed will continue to make use of e-planning strategies in the future, even once face-to-face gatherings are permissible (see [Figure 2](#)). Roughly 64% of statewide forester survey respondents (nine of 14) stated that, as a result of their experience during the COVID-19 pandemic, they plan to use e-planning strategies going forward. By contrast, only about 29% of respondents (four of 14) were using e-planning in their work before the pandemic. In short, in Vermont, county foresters and their collaborators adopted e-planning strategies during the COVID-19 pandemic, subsequently discovered new ways to engage with the public around community forest planning, and plan to continue to use these new strategies going forward.

The statewide forester survey also revealed challenges related to technology, a theme that did not emerge via the case study. County foresters and their partners described how technology created a challenge on both sides of the e-planning process; that is, it was a barrier for those creating content and running online meetings as well as for members of the public who were attempting to engage with e-planning. Vermont is a rural state, and both natural resource professionals and members of the public struggle with lack of internet access. This was evident in responses to statewide forester survey, where roughly 43% of respondents (six of 14) noted that technology created a barrier for themselves and their participants. For example, one respondent stated:

“I am not great with technology, and even less so with new (to me) technology. So, someone else has been setting up my Zoom and Teams meetings. Even then, I have trouble connecting sometimes, and if I want to show another screen, I find myself disconnected. This difficulty managing the technology, leads me to participate, but not initiate, outreach.”

Another respondent noted, “new technology and slow or interrupted internet service is a problem.”

Thus, while e-planning created new opportunities for some, the technological requirements did present a barrier for others.

Member-Checking

Member-checking with key informants confirmed that many county foresters and other natural resource professionals were actively planning community outreach and engagement activities when the COVID-19 pandemic began and subsequently shifted to e-planning when in-person gatherings became unsafe. This corroborates the findings from the case study and the statewide forester survey that e-planning increased during the COVID-19 pandemic as a way for county foresters to still accomplish community engagement work. Member-checking confirmed that webinars and online meetings were common ways in which county foresters and their partners accomplished education and outreach with the public during the pandemic.

Member-checking also confirmed that public participation with community forestry increased during the study period. One interviewee described how the move to e-planning helped reach members of the population who would not have been served by traditional forms of face-to-face outreach activities when they stated, “[e-planning] has proven, to me, to be really good to get some people who wouldn’t have gone to a workshop to attend online. So that’s been really positive.” They went on to explain, “We do have cooperators that are aged, that can’t walk in the woods like they used to. So this is a way that we could engage them.” Another interviewee expressed similar ideas when they noted that e-planning has been, “a great way to get people involved. And there’s a lot of people that can’t participate in person—people that live too far away, or they’re older and can’t really walk through the woods, but really want to learn about these things.”

Member-checking corroborated the idea that e-planning will likely continue even once traditional forms of community engagement are deemed safe again. When asked whether they would be likely to continue with e-planning after the pandemic, one interviewee stated, “Yes, absolutely,” and then added, “I think it’s incredibly valuable.” Another interviewee echoed that during a member-checking interview when they said, “No, I don’t think we’ll go back ultimately to entirely in person. In the future, I definitely think it’ll be a hybrid.”

Finally, member-checking supported the notion that technology did create a barrier to participation for some stakeholders. One key informant stated the following during a member-checking interview, “Many

of my constituents, they're out in the hinterlands and a lot of folks simply don't use their videos because it limits their bandwidth and so it's a problem." They went on to add, "[it is] actually an enormous problem. And that also speaks to justice issues—who is getting the broadband?"

Discussion

Results of our study shed light on the implications for use of e-planning in the context of public land management. Our study focused only in Vermont, and is not necessarily representative of e-planning in the context of forest management more broadly. Nevertheless, our data suggest that trends in Vermont mirrored those described by the [National Forest Foundation \(2020\)](#): greater numbers of individuals participating in e-planning events than had previously been observed at face-to-face forest planning events. Although this finding is promising, it is not without important caveats. We did not have access to reliable participation data prior to the pandemic, so we are unable to make a true comparison between e-planning and face-to-face community forest planning efforts. Rather, our study relies on self-reported experiences of e-planning participants and the perceptions of professionals involved in community forest planning in the state. Thus, we were unable to compare demographic information of e-planning participants to more traditional forms of planning. Further, we were not able to assess nonresponse of either survey. Given that internet surveys tend to maximize response rates in highly internet-literate populations ([Millar and Dillman 2011](#)), this represents a major caveat of our findings. Despite this limitation, the survey results were corroborated by observations and member-checking and align with national-level trends. Thus, our data sources provide important evidence. Still, future studies are needed to confirm our findings and to compare e-planning with face-to-face planning efforts. We encourage other researchers to consider postpandemic paired case study approaches to accomplish such a comparison.

It is also important to note that we are not able to ascertain the cause of the increased participation we observed. Although our data suggest that e-planning has made participation in forest planning easier and, subsequently, more individuals participated in Vermont, there is a second environmental condition that may have also driven participation numbers up: during our data collection period, the State of Vermont had enacted strict stay-at-home orders. Many people

were suddenly unable to pursue the social and professional activities that typically occupied their time. The overall increase in the number of participants may be more connected to this newfound free time than to the means of accessing programming. Again, we encourage future researchers to explore whether the trend of higher participation in e-planning efforts holds true postpandemic.

Despite these caveats, the results of our study suggest that e-planning may indeed be more accessible than traditional planning, supporting suggestions by [Silva \(2010\)](#), [Aitken \(2014\)](#), [Conroy and Evans-Cowley \(2010\)](#), and others that e-planning may increase access. Individuals can attend online events even if they live far away, have trouble walking in the woods, have small children, or a range of other circumstances that would prevent them from easily participating in a face-to-face event. Webinars and virtual planning events can be recorded and posted publicly, which eliminates barriers to public access related to not being able to attend an event at a given time; people who are interested can watch whenever they have time. For these reasons, we encourage anyone involved in natural resource planning to consider adding e-planning strategies to their regular suite of public participation tools.

As natural resource professionals consider e-planning, we encourage them to keep two things in mind. First, personal connections may be established differently online than in-person. Some forms of e-planning are limited to one-way flows of information; for example, prerecorded webinars in which the participants listen to an expert provide information. In some cases, particularly conflict-ridden ones that require dialogue and social learning, one-way flows of information may be insufficient for developing the personal connections required to solve contentious issues ([Leach 2006](#), [Innes and Booher 2016](#)). One-way flows of information may also limit trust development between stakeholders ([Coleman and Stern 2018](#), [Coleman et al. 2018](#)). Conversely, some forms of e-planning, such as synchronous online meetings, may be uniquely suited to building personal connections because they can provide a glimpse into the home life of both planning professionals and participants ([Milz and Gervich 2020](#)). Whereas face-to-face planning efforts typically occur in public spaces, many individuals participate in e-planning from their own homes, where they may be simultaneously caring for family members, preparing meals, and the like, leading to opportunities to build empathy and connection ([Milz and Gervich 2020](#)). Natural resource professionals should carefully consider which e-planning techniques

will work best for their context and explore ways to facilitate connections between participants. The National Forest Foundation suggests using online breakout groups as one option. They write, “In in-person meetings those quick side chats over breaks or coffee go a long way toward making connections and building trust. We used virtual breakout sessions to help participants connect with others informally and to support deeper conversations amongst people than are possible in the full-group virtual meeting room.” More research is needed to understand how personal connections can be engendered via e-planning.

The second thing we encourage natural resource professionals to be mindful of as they engage with e-planning is that technology, particularly broadband limitations in rural areas, may actually limit access for a subset of the population (Lai and Widmar 2021). We observed that trend in Vermont, and our observations align with trends from other fields; the COVID-19 pandemic has intensified the digital divide in the context of public participation in planning (Milz and Gervich 2020), education (Walters 2020), and healthcare (Ramsetty and Adams 2020). Not all communities enjoy access to high-speed internet, and rural communities may be particularly disadvantaged in this way (Lai and Widmar 2021). Given that many natural resource professionals conduct planning efforts in rural communities, it is important to consider internet access when pursuing e-planning strategies. Further, technology may present different barriers for different demographic groups; our results suggest that older individuals may be less fluent in new technologies. Such barriers could limit participation. We stress that accommodations must be taken for people with disabilities, such as ensuring closed captioning is available for webinars, and we encourage natural resource professionals to think critically about issues related to access as they explore the use of e-planning.

Conclusion

The COVID-19 pandemic has precipitated many changes in civil society, and public participation in public land planning and management is no exception. In Vermont, county foresters quickly pivoted to e-planning when the pandemic limited face-to-face opportunities. This resulted in a wide range of new strategies for conducting public engagement connected to the planning and management of community forests around the state. It also resulted in increased public participation in these planning efforts. Importantly, our results suggest many county foresters

will continue to incorporate some form of e-planning into future outreach and engagement efforts, even once it is safe to resume face-to-face gatherings. Although we observed that e-planning presents access and equity issues related to comfort with technology and internet connectivity, our results also suggest that it increases access with respect to physical ability and geographic limitations. E-planning offers an outreach strategy that may appeal to a broader audience, thus informing a greater slice of the population about the management and planning of their own community forests (or proximate national forest, park, or other resource) and their general understanding of responsible stewardship of that resource. At the same time, e-planning may represent a means for broadening the perspective and values represented in natural resource management. We encourage natural resource professionals who work on the planning and management of public land to consider the use of e-planning and its implications.

Endnotes

1. In this context, a warning is a public notice that outlines the topics that will be discussed at a given town's annual town meeting.
2. We recorded three hundred individuals participating in the webinars, which was the maximum number of spots available on the webinar platforms used. Because individuals were able to leave the webinar early and allow for new participants to take their spots, it is possible that some webinar participants did not receive the survey if they arrived to the webinar late and were not recorded as participants. Thus, the total number of webinar participants may have been over three hundred, and the number of potential survey respondents was equal to three hundred.

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