

PULLING IT ALL TOGETHER—PLANNING GUIDELINES AND DESIGN TOOLS FOR CREATING MULTI-PURPOSE LANDSCAPES TO SUPPORT ENERGY OBJECTIVES

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Sustainable bioenergy production requires we plan, design, and manage lands across multiple scales and land uses, balancing energy production with the other services we want from these lands. This is a challenge on private lands, where action is controlled predominantly at the landowner level. “Pulling it all together” implies creating policies, programs, planning concepts, and design tools that take into account these many services so they can be implemented in concert rather than in conflict with each other. Planning guidelines are needed that better match land-use management to land capability, building in greater resiliency and flexibility on the land to future economic and climate vagaries. Tools also must be available for communicating and building support for multi-purpose landscapes. A conceptualized watershed supporting a diversified bioenergy platform, as well as production of food, feed, livestock, and environmental and social services, is presented. Productive conservation systems, especially agroforestry, are an integral part of this watershed. Actual planning and design of such a watershed requires a multi-scale planning framework and tools, such as those we have been developing at National Agroforestry Center. The Conservation Buffers Guidelines book, synthesized from 1,400+ research publications, provides illustrated rules-of-thumb for planning and designing buffers to address multiple objectives, including feedstock production and added conservation to mitigate bioenergy production impacts. A number of GIS-based suitability assessments (e.g. buffer performance and water quality, agroforestry products, riparian connectivity, and farming suitability) can be overlaid to provide guidance for optimally locating systems to meet multiple purposes. Other tools include a buffer-width tool for water quality and a cost-benefit analysis tool for then designing the individual practices in a system. CanVis provides photo-realistic scenarios that enable landowners to “test-drive” alternatives on the lands. By “Pulling it all together,” landowners, natural resource professionals, communities and industry can build a sustainable, multi-purpose bioenergy future.

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