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**Soil/Site Disturbance and Challenges for Utility Scale Solar facilities in Virginia**

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Development of utility scale solar (USS) in Virginia may disturb > 100,000 ha of land by 2033. Total disturbance ranges from < 20% to > 85% due to topsoil removal/return, cut/fill/grading operations, trenching, roads, structures, and stormwater conveyances and basins. Further disturbance, particularly compaction between panel runs, is likely during the 25 to 30-year lifetime, followed by another round of disturbance for removal of infrastructure. New VA regulations will require mitigation/remediation of impacts to >4 ha to prime farmlands or >20 ha of contiguous forest. Stakeholders are requesting native plant species, "pollinator friendly" assemblages, and/or improved pasture mixes for grazing. Strong soil variability under panel rows vs. middles/alleys leads to strong differentiation of vegetative species and cover. While no site-specific research on USS has occurred to date in the region, applicable work is available from surface mine reclamation and highway corridor revegetation studies. At this point in time, we recommend the following best management practices (BMP's) for USS: (1) Full transparency with respect to short, medium and long term impacts; (2) minimize soil disturbance wherever possible; (3) develop integrated revegetation strategies to meet both short-term erosion & sediment control (ESC) objectives and longer term management goals; (4) lime, P-fertilize and apply tillage to graded subsoils before topsoil return; (5) utilize direct-haul topsoil procedures when possible; (6) monitor soil/site recovery processes over time; (6) avoid acid-forming materials at all costs; (7) use conservative ESC and stormwater modeling procedures; (8) develop clear and well-expressed protocols for infrastructure removal and final post-closure landform remediation. We are also developing a larger range of site-specific BMP's.

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