**Draft Utility Awareness Training for Federal Agencies Outline**

1. Electric System Overview (Objective: Educate agency staff about the electrical system)
	1. Intro to Electric Power business
	2. Generators, transmission lines, substations, distribution lines, transformers, consumer
	3. Our mission: To provide cost-effective reliable power safely. Safety is paramount.
	4. Geometry of line and safe operating clearances.
	5. Photos of each voltage class showing relative height difference.
	6. Distinction between transmission and distribution
	7. Sources of generation: traditional sources (coal, gas, hydro, nuclear) and renewable sources (wind, solar, geothermal, bio-mass)
	8. Telecom to support safe operation (traditional microwave and now fiber)
2. Siting (Objective: comprehensive requirements and multi-discipline approach)
3. Triggered by state energy planning agency to meet projected growth or customer request (e.g. interconnection) or reliability concerns
	1. Use existing ROWs for new lines, uprate existing lines to increase capacity
	2. 368 Corridors – opportunity or constraint?
	3. New authorization or amendment of existing will trigger NEPA
	4. CatEx available for some work. EAs/EIS for larger projects.
	5. Opportunities and constraints analysis. Third party contractors used by utility or agency to prepare documents. (Need clear roles and responsibilities to be formalized in MOU if necessary)
	6. Utilities must participate in agency planning efforts (e.g. land and resource management plan updates, travel management plans, energy demand/transmission plans) to ensure their electric system projects and initiatives and existing uses, including access, are reflecting in the process. Active engagement between agencies and all users including utilities is critical.
4. O & M (Objective: Construction, Operations and Maintenance, outages, tech.)
5. Addition of or improvements made to access roads are typically the largest issue when siting/upgrading or maintaining electric lines. Particularly important for transmission lines where the utility is establishing and maintaining the access roads.
6. Mapping and GIS are key tools in documenting and implementing the COMP/POD
7. Equipment used to construct and service transmission facilities (photos, video) and the roads needed to accommodate them.
8. Timing of construction/maintenance modified to accommodate sensitive species, nesting, etc.
9. Plan of Operations – Key document that will enable utility to operate and maintain their facilities in conformance with their authorization. What activities are covered and what activities require additional approval.
10. Outages are difficult to schedule so time is always of the essence when planning and implementing maintenance activities.
11. UAS applications in inspection – (demo/talk)
12. Some utilities have bundled all of their facilities in a single authorization to reduce administration costs. Takes a lot of work to setup but pays great dividends downstream.
13. Vegetation Management (Objective: State and federal regulations that govern utility maintenance requirements)
14. Northeast Blackout of 2003 triggered major changes to the way utilities operate and maintain transmission lines. Failure to do so results in heavy fines from NERC.
15. Utilities must maintain adequate clearances around their conductors to comply with electric codes and regulatory agencies. Avoid grow ins, fall ins, blow ins.
16. Utilities don’t want their facilities starting fires nor do we want our facilities to succumb to forest fires that are passing through (fire hardening).
17. Trend back to sustainable ROWs: compatible, low and slow growing – not forested ROWs.
18. Wirezone/borderzone. Forested utility ROWs must be managed more aggressively to respond to increased wildfire threat, drought, climate change.
19. Omnibus Act: Coop agreement vs O&M Plan; IOU summary: O&M Plan
20. Veg Mgmt MOU for IOUs
21. Cost Recovery and MOUs
22. Environmental
	1. Data sharing, including GIS
	2. Avian Protection Planning
	3. Cultural Resource protection
	4. Other agency requirements/approvals/permits
23. Exercise scenarios