FROM: HQ AFCESA/CEO  
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1. Purpose. This ETL provides guidance for irrigating improved turfgrass and landscaping on Air Force installations. Executive Order (EO) 13514, Federal Leadership in Environmental, Energy, and Economic Performance, requires the Federal government to reduce water consumption for industrial and landscaping uses by 2 percent annually or 20 percent by the end of fiscal year 2020, relative to a baseline of the agency’s industrial and landscaping water consumption in fiscal year 2010. In addition, appropriate landscape management practices are required.

2. Application. Requirements in this ETL are mandatory.

2.1. Authority: EO 13514, Federal Leadership in Environmental, Energy, and Economic Performance

2.2. Effective Date: Immediately

2.3. Intended Users:
   • Major command (MAJCOM) engineers
   • Base civil engineers (BCE)
   • Base maintenance organizations/building managers
   • Golf course managers/superintendents

2.4. Coordination:
   • MAJCOM civil engineers
   • Air Force Center for Engineering and the Environment (HQ AFCEE)
   • Air Force Services Agency (HQ AFSVA)

3. References.

3.1. Air Force:
3.2. Department of Defense (DOD):


4. Acronyms:

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<tr>
<th>Acronym</th>
<th>Description</th>
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<tbody>
<tr>
<td>AFI</td>
<td>Air Force instruction</td>
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<td>BCE</td>
<td>base civil engineer</td>
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<td>ETL</td>
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<td>HQ AFCESA/CENE</td>
<td>Air Force Civil Engineer Support Agency, Facility Energy Center, Conservation Branch</td>
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<td>HQ AFCESA/CEOA</td>
<td>Air Force Civil Engineer Support Agency, Operations and Programs Support Division, Engineer Support Branch</td>
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<td>MAJCOM</td>
<td>major command</td>
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<td>UFC</td>
<td>Unified Facilities Criteria</td>
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<td>UFGS</td>
<td>Unified Facilities Guide Specification</td>
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5. Requirements.

5.1. Landscape designs, planting, and irrigation systems shall be appropriate to the natural environment and consistent with the installation’s integrated natural resources management plan. Designs shall utilize xeriscaping to the maximum extent possible, using low- to no-maintenance plants, vegetation, and ground cover. Xeriscaping is a comprehensive landscaping program that emphasizes water conservation.

5.2. The installation Energy Management Steering Group shall approve all new irrigation systems to ensure they conform to established guidance. Where it is cost-effective, existing irrigation systems should be modified to conform to meet these standards.

5.3. BCEs shall verify that irrigation schedules are appropriate for climate, soil conditions, plant materials, grading, and season. Irrigation systems must be routinely monitored and inspected for effectiveness. Poorly maintained systems can waste large amounts of water and are often abandoned due to lack of maintenance. Irrigation systems are considered high-maintenance items by the Air Force.

5.4. Maintenance contracts should be established for irrigation systems as part of the installation’s grounds maintenance contract or recurring work program (RWP) for inspection and maintenance of the systems. To conserve water, defective or improperly adjusted irrigation systems should be reported to the civil engineer service call desk so the problem can be fixed as promptly as possible.

5.5. Implementation of sound xeriscape and watering practices can help to significantly decrease water consumption.

5.5.1. Appropriate Design. Use a design that considers soil types and drainage and limits turf area so that landscaping requires limited irrigation.

5.5.2. Soil Improvements. Apply appropriate nutrients to the soil to help maintain healthy plants and minimize water requirements. Proper drainage and soil nutrition will reduce water use and help plants and turf thrive.

5.5.3. Reduced Turf Areas. Limit turf to areas for recreational purposes only. Mowing heights should reduce root stress and conform to Air Force grounds maintenance standards.

5.5.4. Mulching Beds. Moisture-retaining material such as mulch should be used. Mulch reduces moisture evaporation from bed surfaces and reduces weed growth.

5.5.5. Efficient Irrigation (also see paragraph 5.6):
• Limit watering to early morning or late evening (when appropriate) to reduce evaporation.
• Install rain sensors to shut off automatic irrigation systems in response to rainfall accumulation.
• Adjust watering schedule to meet seasonal water demands and fit plant needs and climate.
• Deep watering, less often. Watering areas longer causes plant roots to grow deeper into the soil, creating stronger, healthier plants. Irrigation systems shall be designed to provide an even distribution of water.
• Soil moisture sensor (tensiometer) or rain sensor connected to controls to avoid over-watering.
• Rainwater can be captured, stored, and applied to irrigate areas as necessary (if not prohibited by law).

5.5.6. Climate-Appropriate Plants. Select native plants that are environmentally adapted for the geographic region to reduce water requirements and maintenance. Allow grasses to go dormant in summer in non-recreational areas if no fire danger is present.

5.5.7. Maintenance:
• Ensure proper maintenance and adjustment of sprinkler heads for appropriate watering.
• Conduct routine inspections of irrigation systems to repair leaks and replace broken sprinkler heads.
• Maintain ground cover (mulch), fertilize properly, and prune as recommended.

5.6. Efficient Irrigation Retrofit Options.
• Low-Volume Drip System: Applies water at a constant rate directly to the root zone of the plant, eliminating runoff and overspray and limiting evaporation.
• Water Recycling: Treated wastewater effluent can be used for irrigating recreational fields or golf courses.

6. Point of Contact. Questions or comments about this ETL are encouraged and should be directed to the Grounds Maintenance Subject Matter Expert, HQ AFCESA/CEOA, DSN 523-6465, commercial 283-6465, AFCESAReachBackCenter@tyndall.af.mil.
# DISTRIBUTION LIST

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