



The California golf industry is well aware of the perception of golf and large turf area water use during drought. The industry also realizes the need to be a part of the solution to mandated conservation goals of multiple water districts and purveyors throughout the state. To that end, the California GCSA has taken the opportunity to establish ongoing dialog with area water providers and policymakers in regards to the current drought. This dialog can affect long-term strategies that can only be achieved through deliberation and the freedom from crisis, giving the golf industry the ability to deal with current and future circumstances however and whenever they arise.

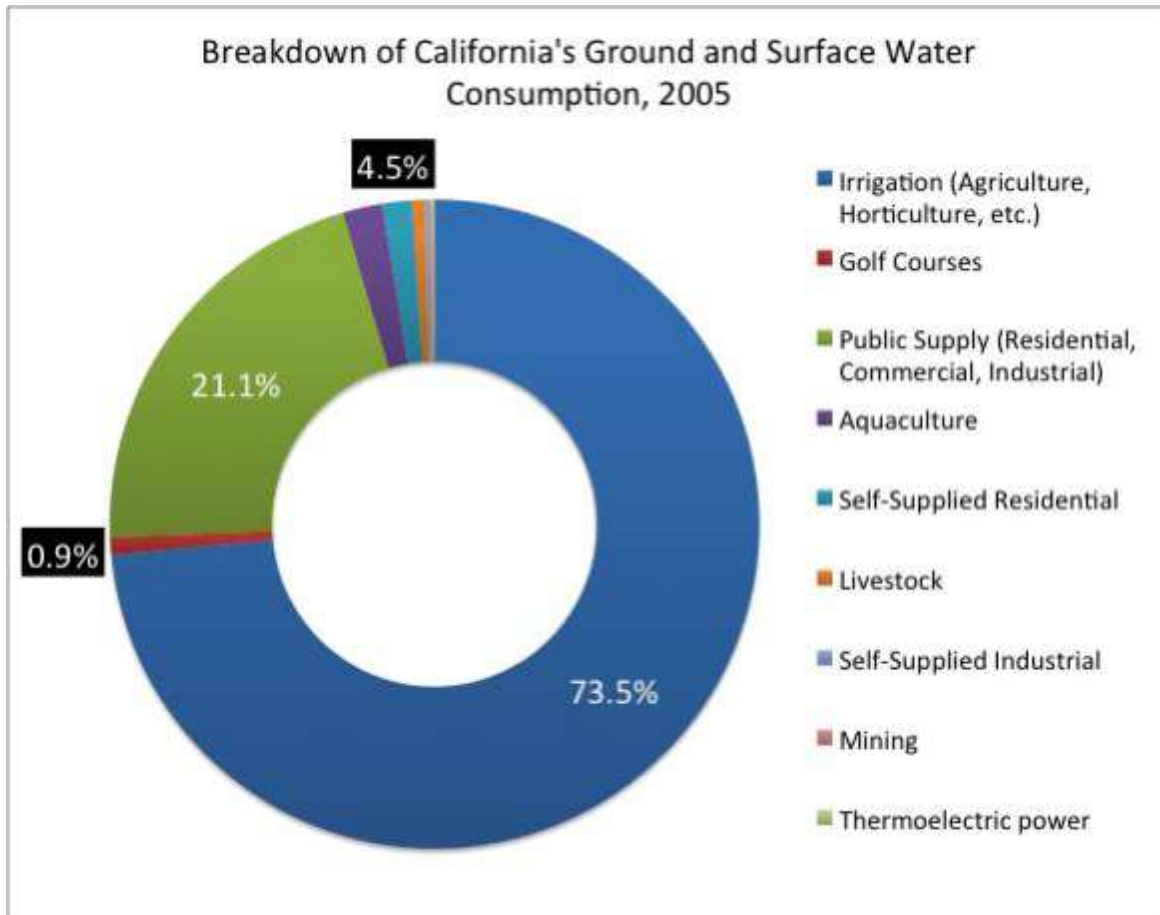
Water Conservation efforts being conducted by golf course superintendents:

- **Turf Reduction:** Golf courses in all regions of California continue to remove turf and replace with drought tolerant landscapes. Courses realize an approximately 80% water savings on the areas that are removed.
- **Use of reclaimed water where available:** 37% of golf facilities located in the Southwest Agronomic Region and 17% of golf facilities located in the Pacific Agronomic Region use reclaimed water for irrigation (national average is 12%). Infrastructure and having access to reclaimed water lines is still a problem in many areas, but where it is available, the golf industry encourages its use.
- **Irrigation Audits:** Golf courses routinely perform irrigation audits to determine that irrigation systems are operating at maximum efficiency levels. Items that are looked at during a typical audit include the water source, pumping system, valves, control system, heads (leveling), nozzles (higher efficiency nozzles) and best management practices pertaining to irrigation.
- **Efficient Irrigation Systems:** When it's economically feasible, golf facilities are replacing older irrigation systems with state-of-the-art systems and technology packages. Mobile sensing technology collects information on soil moisture, turf vigor, salinity, compaction and elevation on an existing golf course, and then generates GIS-accurate maps that aid with the overall irrigation system design and management. Upon installation, these systems provide real-time data (updated every 5 minutes) and allow the superintendent to control individual sprinkler heads insuring maximum efficiency. The central control systems feature a complete diagnostic component that alerts staff members to stations, holes or areas that are not functioning properly.

- **Water Conservation Task Forces:** Golf industry water conservation task forces have been formed in the Coachella Valley, Los Angeles, Pasadena, Sacramento, San Diego and Ventura County. These task forces work proactively with water agencies and municipalities to address restrictions, develop conservation plans and assist in building long-term water policies that are effective for the golf industry, water agencies and California communities.
- **Development of drought emergency plans:** These plans are a step-by-step guide to assist facilities in preparing for potential water restrictions. Typically, this is done in a phased approach mandating facilities to cut back 10, 20, 30, and 40 percent or greater as subsequent drought emergency levels are reached.
- **Soil Moisture Meters:** Superintendents are rapidly increasing the use of soil moisture meters to aid their irrigation scheduling decisions. Moisture meters monitor the percentage of moisture in the soil, soil temperature and salinity, taking guesswork out of the equation. In addition to aiding in irrigation scheduling, the moisture meter allows superintendents to provide uniform putting surfaces in regards to firmness and speed.
- **Wetting Agents:** Wetting agents are substances that promote the penetration of a liquid into a water repellent soil. These agents assist superintendents in maximizing and limiting the use of increasingly expensive water supplies. Approximately 92% of golf facilities nationwide employ some type of wetting agent.
- **Continuing Education:** The California GCSA, GCSAA and the USGA provide continuing education to golf course superintendents in water management and conservation. Monthly meetings, the Golf Industry Show, regional forums, webinars and online materials are provided by the above mentioned professional associations.
- **Fast and Firm:** The golf industry has adopted fast and firm maintenance practices. Less water use leads to firmer, drier and often healthier turf. The USGA has led these efforts with the 2014 US Open at Pinehurst being a showcase for these practices as irrigation was reduced from 51 million gallons to 15 million gallons per year during the renovation process. Additionally, the 2015 US Open at Chambers Bay and the 2017 US Open at Erin Hills will be played on golf courses that feature similar conditions.
- **Turfgrass Research:** GCSAA and its affiliated chapters, the USGA and university based researchers have made huge advancements in both the technology and science of turfgrass management. Water conservation, turfgrass breeding programs that have created more drought and salt tolerant varieties of turf, turf biotechnology and integrated turf management programs are insuring a healthier and brighter tomorrow for the golf industry.

Golf's Water use in California:

- Golf courses represent approximately 3.5 percent of the total turfgrass in California.
- Golf courses account for less than 1 percent of total fresh water used in the state.
- Golf courses produced significant economic returns in comparison to other agricultural commodities that require irrigation. Golf courses produce \$10,124 in revenue per acre-ft. of water which is significantly higher than most crops.

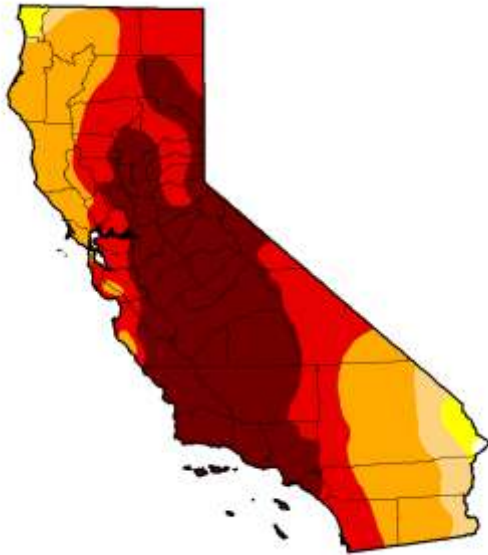


Economic Impact of the golf industry on California:

- 866 golf courses
- Direct Economic Impact of \$6.3 billion
- Total Economic impact of \$13.1 billion
- 128,000 jobs
- Total wage income of \$4.1 billion
- Charitable giving of \$364 million

Resources for superintendents/media:

- GCSAA Water Resources Center
<http://www.gcsaa.org/environment/resources/water-conservation/>
- GCSAA Water Profile
<http://www.gcsaa.org/environment/>
- USGA Water Resource Center
<http://www.usga.org/greensectionMicrosite.aspx?id=21474866248>
- U.S. Drought Monitor-California
<http://droughtmonitor.unl.edu/Home/StateDroughtMonitor.aspx?CA>



- California Department of Water Resources
<http://www.water.ca.gov/waterconditions/waterconditions.cfm>

- California State Water Resources Control Board

<http://www.swrcb.ca.gov/>

- California Institute for Water Resources

<http://ciwr.ucanr.edu/>