

Proposal Paper

Independent Technical Panel on Demand Management Measures Final Report on California Landscape Water Use *1/15/2016 update*

Section #: 7 *(From the current draft outline)*

Section Title: Complementary Policies and Regulations *(From the current draft outline)*

Recommendation #7: Upgrades to the California Irrigation Management Information System (CIMIS)

Authors: Peter Estournes and Dave Fujino

Background:

The California Irrigation Management Information System (CIMIS) is a program unit in the Water Use and Efficiency Branch, Division of Statewide Integrated Water Management (DSIWM), California Department of Water Resources (DWR) that manages a network of over 150 automated weather stations in California. Archived data is also available for additional 92 inactive stations that have been disconnected from the network for various reasons. CIMIS was developed in 1982 by DWR and the University of California, Davis (UC Davis). It was designed initially for agriculture to assist irrigators in managing their water resources more efficiently but has since grown to include Landscaping, water providers and even fire fighters. Efficient use of water resources benefits Californians by saving water, energy, and money.

Thirty years ago, scientific research successfully responded to the need for improving irrigation efficiency and management for agricultural use with the development of the CIMIS program. This program provided evapotranspiration data used by farmers for creating a water budget for a specific agricultural crop. The use of evapotranspiration data has resulted in significant agricultural water savings through improved irrigation efficiency in agriculture throughout California. Through out its tenure the CIMIS network has also become useful to other interests such as landscaping. A peer reviewed article written in 1997 points out the history, usage, benefits and potential future of CIMIS (*California Agriculture* 54(3):21-25. DOI: 10.3733/ca.v054n03p21. May-June 2000) During the past 14 years, irrigation manufacturers have focused on testing and introducing to the market weather-based irrigation controllers that utilize the same CIMIS evapotranspiration data for improving irrigation efficiency as agriculture. These “smart” controllers access and utilize evapotranspiration data to achieve landscape water savings by creating a water budget for a specific urban landscape. Therefore, the more accurate and consistent the evapotranspiration data, the more opportunity for agricultural and landscape water savings through efficiency.

In its time the CIMIS program and network has become the standard for scientifically measuring evapotranspiration to assist in crop and landscape water usage and budgeting. With the current

drought emergency and in future ones both landscape and agricultural water usage are under scrutiny. Providing science/research and standardized metrics provides the consuming public with confidence knowing that water in both of these sectors is properly managed.

Unfortunately the program is consistently underfunded and is not able to meet the obligations set forth in its charter. There are gaps in the system making for an incomplete picture of evapotranspiration rates. It is not designed for urban and suburban areas and attempts to infill gaps within its current structure (as stated, it was originally intended for agricultural applications)relies on spatial data that is not accurate enough. There are too few standard weather stations and a need to create new modified or different weather stations aimed at urban and suburban areas plus a way to link them all together. The way the information is retrieved by professionals needs to be looked at as well.

Recommended Action:

Although the program has shown a steady growth over the years to accommodate the needs of over 50,000 primary registered users and thousands more secondary and non-registered users, the current system still has spatial data gaps due to lack of CIMIS stations in certain regions of the State. While satellite information is being used in conjunction with active CIMIS stations and spatial data is available down to a 2 Kilometer area, the accuracy of the spatial CIMIS data depends on the density of ground stations and accuracy of station data. Adding more stations with quality data can significantly improve CIMIS's usefulness as a water conservation tool. Finding an appropriate site for new CIMIS stations is one of the limiting factors in the expansion of the CIMIS network. An ideal CIMIS site would require a well-watered cool-season grass with adequate fetch of about 600-ft in all directions. Providing an incentive in the form of a tax break or exemptions from certain ordinances can motivate landowners to provide the required field.

Despite significant increases in user base and CIMIS data uses, the operational budget for the program has remained about the same for more than three decades. Currently, CIMIS has less than five full-time employees statewide that deal with installation and maintenance of the stations, data quality analyses and monitoring, research and development, and user assistance. This makes it very difficult for the program to provide quality services to its users and to respond to station problems in a timely manner. At a time where California is in the fourth year of an unprecedented drought, the viability of the CIMIS program is critical.

The CIMIS user interface can also be improved by upgrading the system using current technologies. CIMIS provides an invaluable weather information for landscape water budgeting and irrigation scheduling as prescribed by the Model Water Efficient Landscape Ordinance (MWELO). A simpler method (for example a user dashboard)should be determined and implemented to create and link CIMIS information to irrigation professionals as well as the general public to provide guidelines for crop and landscape water scheduling among other uses. This should include an appropriate number of reporting stations, an upgrade in technology and adequate funding for a reliable program.

With the importance of reducing water waste in California, and recognizing the large amount used for irrigation of crops and landscapes, tools such as the CIMIS network are important to water managers in meeting State mandated water budgets for agriculture and landscapes meeting state guidelines and MWELO requirements.

Proposal:

DWR shall work in conjunction with academic institutions and others to create a user friendly, public domain process to identify, collect and distribute weather information (such as ETo data, precipitation, and soil temperature). To accomplish this, the CIMIS network shall be updated to current technologies and more reporting stations installed including the creation and installation of stations for urban and suburban areas as well as improved development of spatial CIMIS. The Department of Water Resources will request and the Governor will propose that the State Budget will fund these improvements by providing approximately \$3M/year and for DWR to run the program as a complete budget within the next 3 years as part of the overall importance of managing agricultural water use and reducing potable water use for landscapes in California.