

Model Water Efficient Landscape Ordinance: Barriers to Implementation (Pilot Study)

Report for the California Department of Water Resources

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Executive Summary

Water supply in California is increasingly challenged by changing weather patterns due to climate change. The once reliable winter precipitation and subsequent snowpack that stored needed water in the high mountains of California and subsequently fed California's reservoirs has become less reliable over recent decades and the future is poised to bring more uncertainty. In response, Californians must become more sustainable in the ways they consume water, be it for commercial production and manufacturing, food production on California farms and ranches or urban residential consumption by homeowners. Sustainable water use must become a way of life in California through either voluntary reductions or regulated restrictions.

Regulated efficient landscape water use is the goal of the Model Water Landscape Ordinance (MWELo). Assembly Bill (AB) 325 was passed in 1990, establishing the first California MWELo, which set out to conserve water by limiting urban landscape water use while maintaining the collective public and private benefits derived from aesthetically pleasing landscapes. While enacted at the state level it is the obligation of local government land-use agencies around California to establish MWELo, or a more stringent local water landscape ordinance (WELo), that mandates efficient landscape water use and restrictions on types of plants used within the landscape and requires MWELo to be overseen by a local enforcement agency. On the surface, the concept of matching landscaping plans to a water budget based on local micro-climate conditions seems straightforward but, as this research shows, many local government agencies serving communities across California struggle with implementing and administering MWELo.

The objective of this pilot study was to document empirically the challenges and barriers that local enforcement agencies face in their efforts to comply with and meet the objectives of MWELo. Our efforts included the administration of a survey, distributed to all MWELo responsible agencies throughout California. The purpose of the survey was to quantifiably assess the resources available to enforcement agencies for the purpose of MWELo compliance. Survey responses were supplemented by a series of qualitative one-on-one interviews with agency staff members who were most knowledgeable about MWELo enforcement in their local community. Interview responses provided qualitative assessments of MWELo compliance challenges given resource availability, agency culture and collective agency and community leadership.

It's assumed that many of the struggles California agencies have administering MWELo are compounded by the limited resources allocated for the purpose of managing MWELo. Survey responses from representatives of 174 land-use agencies across California indicate 65 percent of California communities commit two people or less to MWELo oversight duties, and less than 40 percent of those assigned MWELo oversight duties have formal training or access to formally trained experts in the field of landscape architect or other horticultural practice to handle the highly technical aspects of MWELo compliance. Communities also invest little in formal MWELo training for their staff members. Slightly more than half (53 percent) of all agencies participate in some degree of MWELo training with the majority of those averaging less than 2 hours of training per year. In total, 70 percent of local government agencies, tasked with MWELo oversight duties, have staff attend less than 2 hours of MWELo specific training per year. The lack of human resources allocated to MWELo are matched by the non-existence of technological resources dedicated to MWELo. Compliance with MWELo includes mandatory annual reporting to DWR requiring careful record keeping and documentation. Across respondent agencies only 15 percent of MWELo have information technology dedicated to MWELo documentation.

Statements made from multiple one-on-one interview respondents indicate that the low-level of investment toward MWELo compliance is a manifestation of the low priority elected officials and senior agency staff leaders place on MWELo and its objectives. The personal opinions of local agency staff interviewed is that agency leaders don't understand MWELo or how to project manage MWELo enforcement into local land-use development projects and, therefore give MWELo low priority. In many cases this leads to agency leadership assigning MWELo responsibilities to junior staff members already burdened with other job requirements and who hold no seniority or authority to mandate other community development colleagues, in their agency or other complementary land-use agencies, to incorporate MWELo standards into the development process. Moreover, turnover of personnel within agencies can result in loss of any institutional knowledge gained relative to MWELo. As a seasoned staff member leaves new staff must take up the charge and learn the complexities of MWELo. As such, full compliance with MWELo is difficult to obtain.

There was broad agreement across the one-on-one interview participants that for many agency staff MWELo is difficult to fully understand and complicated to implement. Where

elected officials and senior agency staff support MWELO compliance they make sure that resources are available or increase fees to hire horticultural or local specialists to ensure MWELO compliance. Many local agencies require agency clients to hire and pay for the services of a trained professional to ensure compliance, but this practice can be inconsistent and has potential to create conflicts of interest relative to MWELO compliance. The inconsistencies stem from only requiring hired experts for one phase of a project, mainly the proper completion of MWELO documents for entitlement applications. Once the project is cleared and construction has begun the expert services are no longer mandated. Furthermore, the hiring and paying of expert services by agency clients creates an agency issue with regards to whose interests the expert represents. A landscape architect being paid by a developer has incentive to “approve” or “sign off” on final inspections and audits regardless of if MWELO compliance is achieved to remain in good standing with the developer and ensure future employment.

Recommendations for how to alter MWELO were provided by the individual interview respondents. Recommendations were made for how to improve MWELO training that is offered by various groups in California, how to improve MWELO itself and what tools DWR could provide to local agencies to assist with MWELO compliance.

Recommended changes to MWELO training

- Some of the training offered for MWELO tends to get too technical (“deep in the weeds”) to a point beyond most planners’ skills.
- MWELO training received from DWR and StopWaste.org focuses too much on how to conduct the preliminary review. A greater need exists for training on how best to project-manage for MWELO. If the ordinance could be broken down and the technical aspects of it take out, then a clearer understanding of the steps and the proper order of occurrence could be understood. Respondent believes this would help planners. Then people involved could easily figure out what steps in the process they are responsible for. “I don’t need to know how to calculate a water budget, I need to know that there needs to be a water budget included and an inspection of that water before approving the next step.”
- Training that focuses on enforcement examples from other municipalities would be useful. How are different communities conducting enforcement tasks? Specifically, how are smaller municipalities monitoring for MWELO while keeping costs down?
- DWR should be more directly involved in the MWELO training courses developed by third parties. There needs to be some consistency in what is taught across courses.

Recommended changes to MWELO itself

- If would be good if DWR had “realistic expectations” with regards to field inspections and enforcement and what that part of the process should “look like”. There is uncertainty on what inspections should entail.
- DWR should be less “nicky-picky” and just focus on water budgets being met. Make the whole process simpler. Make it all about meeting the water budget. “People pushing the buttons on their irrigation system have no idea what they are doing.”
- State should promote use of a water budget-based rate system for pricing municipal water.
- DWR might think about breaking down MWELO into a uniform checklist of what will be required for each development site. Making requirements uniform throughout the state would be helpful. Now there is no consistency.
- DWR should simplify MWELO and its requirements for those smaller communities that do not have resources or expertise. There are aspects of MWELO which are not important to small communities. They do the checks required by the ordinance but don’t put much value of what is being monitored. For example, the soils analysis is not necessary respondent believes.
- Need a way to require water districts to share meter output so it can be used to monitor water use and compliance.
- The soils analysis portion of the application process is not necessary and makes the MWELO application process too cumbersome. They don’t see the benefits gained from the soils analysis. Would recommend to DWR to remove soils analysis requirement.

Recommended tools and services DWR could offer to assist with MWELO

- More detailed explanation on how to perform certain calculations required by MWELO.
- It would be beneficial and very useful to have a flow chart to follow and screen certain projects out.
- DWR should offer more outreach for the community in general on why MWELO exists, what its purpose and goals are and why MWELO is necessary. Public outreach and education geared toward changing attitudes about landscaping would be beneficial.
- The building industry should be viewed as a main driver in the success of MWELO and respondent feels that DWR should work to get this industry on board with regards to the look, feel, and economic benefits of MWELO compliant landscapes. Buy in from building industry will make the job of government agencies much easier.
- DWR could help with more research and outreach to larger developers around the state. Somehow getting to the key people in each company to make them more aware that MWELO is statewide and must be complied with statewide. Let them know there are consequences to not having a good MWELO plan.

Finally, the culmination of analysis offers a description of the characteristics within a community and agency that exemplifies “high performance” in their management of MWELo. Such a community/agency would have the following attributes.

- Leadership prioritizes and champions water conservation and water use efficiency.
- Leadership provides the time, tools (training), and resources (internal and external) to effectively accomplish the MWELo process.
- Staff has clearly defined roles and responsibilities for MWELo administration.
- Agency has trained, educated and tenured staff administering MWELo with little to no turnover.
- Agency has a defined process for managing the MWELo process within and between departments.
- Staff clearly understands “who is talking to whom, about what, to ensure MWELo application completion”.
- Agency has a communication process/system in place to ensure effective communication internally and externally.
- Agency has a trained, experienced designated project manager for facilitating the MWELo application internally and externally.
- Agency has a defined process for conducting post-MWELo application process feedback for future improvements to the process.

Introduction

Water is a scarce resource in California. The reliability of available water supplies is significantly affected by climate change, increasing the uncertainty that annual water supplies in California can keep up with water demand. The need for Californians to become more efficient and sustainable in their water usage, be it for agriculture, product manufacturing or residential water use, is necessary and increasingly urgent. In the early 1990's the state government of California, to regulate Californians to be more water conscious, enacted the California Model Water Efficient Landscape Ordinance (MWELo) through Assembly Bill (AB) 325. The establishment of MWELo required local municipal or county land-use agencies to administer standards on landscaping for new residential and non-residential construction, rehabilitated landscapes and requires efficient water use practices on existing landscapes greater than one acre (2015 MWELo). The MWELo required agency staffs throughout the state to focus on technical details of urban landscaping such as plant palettes, water budgets, irrigation systems, soil conditions and soil amendments. Few of the agency staff members responsible for enforcing MWELo at the local level around the state have formal training or experience in the technical aspects of efficient landscape water use and the complexities of administering and reporting MWELo compliance. These factors, along with other unique dynamics specific to the enforcement agency create barriers and constraints for many communities in their efforts to enact and comply with MWELo.

After briefly describing the history of MWELo and providing the motivation and objectives of this research project, this report empirically identifies and documents the sources of constraint for California land-use agencies to fully enact and comply with MWELo. We utilized information published by California Department of Water Resources (DWR) Landscape Stakeholder Advisory Group (LSAG 2019) for providing content for the online survey, the survey questions and survey structure, and for the process and questions utilized in the in-person interviews. We discuss the use of quantitative survey data along with statements from qualitative person-to-person interviews as our means of assessing what is working and what is not working relative to MWELo implementation. What do administering agencies lack in training and resources and what, in their experience, are the biggest constraints to MWELo functioning well in their community. Empirical results provide clarity on why agencies struggle

with MWELO and offer recommendations to DWR on how to improve MWELO while maintaining the objective of urban water use sustainability.

Section 1. MWELO Background, Project Motivation and Goals

1.1 Background on MWELO

The Model Water Efficient Landscape Ordinance (MWELO) was developed by the California Department of Water Resources (DWR) in response to the 1990 passage of the Water Conservation in Landscaping Act (AB 325), with the 2015 MWELO being the most recent version. MWELO was developed as a model for local agencies to enforce minimum water use efficiency standards in landscape design, construction, and management for certain types of landscapes. MWELO design standards apply to land-use, soil, plant types, irrigation efficiency standards, infiltration, and retention of stormwater onsite, and the use of non-potable water supply on certain landscape types. MWELO sets an upper limit for the water budgets of residential and non-residential landscape projects, thereby realizing water-use efficiency through the thoughtful selection of climate-appropriate plants, organic soil amendments, water-saving irrigation devices including regularly scheduled performance audits, and the use of alternative water supplies. MWELO drives sustainable landscape practices and innovation of landscaping equipment, products, and materials to use water resources as efficiently as possible.

The MWELO, or a more stringent local Water Efficient Landscape Ordinance (WELO), are required to be in effect throughout California. MWELO is triggered when a building or landscape permit, design review, or plan check is required, and certain size thresholds of the irrigated landscape are met. The local agency (city or county) is responsible for reviewing projects and enforcing MWELO unless a cooperative agreement is made with the local water provider or other agency to enforce it. Departments or Divisions that might be involved in MWELO enforcement include planning, community development, building and safety, engineering, city arborist, public works and/or water.

1.2 Motivation and Objectives of Project

Part of the MWELO regulation, California Government Code 65595 and 65597, requires the local enforcement agency to report to DWR annually on the implementation of MWELO. MWELO Section 495 mandates local agencies responsible for enforcement to report the quantity

and types of landscape projects approved by occupancy, square footage of projects approved, and identification of the approval entity and account for MWELo enforcement measures for the previous calendar year. Local agency compliance with MWELo Section 495 reporting to DWR has been inadequate in recent years. For example, in 2018 over 60 percent of the local agencies tasked with MWELo oversight throughout California failed to submit their Section 495 report. These non-compliant agencies likely face barriers with MWELo compliance that will be discussed in this report.

The objective of this study is to better understand the challenges community land-use agencies throughout California have relative to MWELo compliance. Why do some communities seem to have a well-functioning system for managing MWELo, while others struggle with implementation and oversight? To achieve this objective a grounded theory (Glaser and Strauss 1967) approach was used to generate conceptual themes that account for variations in MWELo compliance. To achieve objectives primary data collection included a survey of agencies statewide and two rounds of in-depth interviews from representatives of agencies throughout California. The first round of interviews involved representatives from agencies in California that are deemed to struggle with managing MWELo, while the second round focused on agencies that have well-functioning MWELo systems in place. Survey and interview responses were analyzed using a comparative method to inductively identify key elements that influence successful implementation of MWELo. Data from respondents also provide recommendations for how MWELo could be improved or what resources could be provided to agencies that encourage and enable greater overall compliance.

Section 2. Research and Design Methods for Assessing Barriers to MWELo Implementation and Administration

2.1 Data Collection and Analysis

To meet state-level compliance requirements for MWELo, local communities must commit resources toward the implementation and management of MWELo. It is assumed a well-functioning MWELo process would require expertise relative to the technical intricacies of MWELo. Either an agency has staff members who are formally trained in landscaping, irrigation systems or other horticulture profession or have access to local experts who work on the agency's behalf. Investment in MWELo training for staff members to understand compliance requirements and best practices for achieving compliance would also benefit the MWELo process. In addition, investment in information technology to track and document MWELo projects would be an advantage in managing MWELo compliance.

The goal of the survey was to acquire empirical measures of tools, knowledge, and expertise available to local community agencies for the purpose of MWELo administration. The degree to which an agency has access to resources for MWELo also provides insight relative to the context within which agency staff must manage MWELo requirements. For example, a community that is committed to the water-efficiency goals of MWELo would likely invest more resources toward MWELo than a community whose leadership deems MWELo an unimportant burden to building and development.

How do variations in resource availability by the community impact the MWELo process? How does variability in resources influence the challenges of MWELo management for agency staff? What practices, do agencies with limited resources use to overcome these challenges, if they do? What are the main drivers that determine the effectiveness and efficiency of a local agency's MWELo process? Addressing these questions is the goal of the individual one-on-one interviews. Using the practical experience of agency staff members, who are tasked with MWELo management, the interviews provide the basis for the drivers of effective MWELo implementation and administration to emerge. Interview responses provide insight to the challenges of effective MWELo implementation as well as their links to the emerging drivers.

2.2 MWELo Online Survey

The purpose of the MWELo survey was to collect data relative to the quantity and quality of resources available to local agencies for the purpose of MWELo implementation and enforcement. Survey questions were organized into four distinct sections that identified different forms of resources and training available to the agency for MWELo administration as well as the context and volume of MWELo projects the respondent agency administered (Appendix A). The four sections are as follows using a socio-technical systems approach which considers both technical and human elements of an organization.

- 1) Human resources utilized for MWELo administration and enforcement
- 2) Technical training utilized for MWELo administration and enforcement
- 3) Technical resources utilized for MWELo administration and enforcement
- 4) Follow up information specific to agency.

The first section measured the number of people within an agency assigned MWELo administration duties and the availability/use of professional, formally trained horticulturalists, irrigation specialists or landscape architects to assist in the complex aspects of MWELo administration.

The second section measured the investment of local agencies in training their staff on MWELo through formally offered workshops from various providers, the usefulness of this training and what (M)WELo technical training subjects respondents believed are most needed.

Section three questions measure the availability and use of information technology within the administering agency for the purpose of MWELo enforcement and documentation required for MWELo reporting.

Responses to section four questions measured the volume of MWELo applications processed and the geographic location of the agencies.

Distribution of the survey was done using a DWR-provided list of MWELo primary contact email addresses for local and regional agencies throughout California. One week prior to administration of the survey, all contacts on the list were sent an introductory email informing them of this project, its purpose and notifying them of the pending survey (Appendix A). The preliminary email also verified that all responses to the survey were proprietary and confidential. Through responses to the introductory email, updates to agency contact information was made and helped guide final survey distribution to those staff members responsible for MWELo

compliance in their community. In total, 526 agencies throughout California were provided the opportunity to participate in the survey portion of this study.

One week after the introductory email another email with the link to the online survey was sent (Appendix A). The survey was administered electronically using the Qualtrics online survey software. After initial distribution, respondents were asked to complete the survey within one month. Two weeks after distribution a reminder was sent to all agencies. In total 174 agencies completed the survey for a response rate of 33 percent.

2.3 MWELo In-depth Interviews

Survey responses provide estimates of the resources and technical expertise available to California agencies for implementing MWELo in their local community. Indeed, it is logical to infer that availability of adequate resources for the purpose of MWELo can influence implementation challenges and dictate the degree of successful compliance. But which resources are most crucial, how does the variability in resources challenge agency staff when ushering a client through the MWELo process and how do agencies around the state overcome these challenges? In addition, why do some local agencies lack the resources to implement MWELo? What could be done to ensure agencies in California have the resources they need to properly implement MWELo? In short, what are the elements, both internally and externally, that drive an effective MWELo process? To address these questions two separate series of one-hour, person-to-person interviews with representative respondents from public agencies around California were conducted. To encourage openness, each interview respondent was informed the answers they provide would be confidential and included anonymously in final reporting. Each round of interviews involved open ended questions for the participants. Interviews were conducted to illicit descriptions of how MWELo is implemented by the respondent's agency, how the process has evolved over time, what areas of implementation were viewed as most challenging by the respondent and their colleagues, why, in the respondent's experience, these challenges existed and what, in the opinion of the respondent, could be done to improve MWELo for their community.

Participants for all interviews, and the agency they represent, were initially recruited through the online survey. Prior to the survey the goal was to identify 40 separate agencies as

potential targets for the one-on-one interviews. In total, 62 respondent agencies indicated a willingness to participate in the interview phase. The complete participant pool of 62 was then subdivided according to the average annual volume of building activity in the community from 2015 through 2019. It is assumed that communities with various levels of building activity would have different experiences and knowledge of MWELo, and therefore provide greater insight into challenges and solutions relative to MWELo oversight.

Level of building activity was determined by matching data on number of annual building permits issued (USHUD 2022), which is available at the municipal level, by each of the potential participant communities. After linking building activity to individual communities, potential respondents were placed into one of five categories. The distribution of potential interview participant pool is shown in Table 3.1.

Table 3.1 One-on-one Interview Pools

Number of Building Permits per Year	Potential Interview Participant Numbers	Number of Agencies struggling with 495 Reporting Compliance¹	Number of Agencies NOT struggling with 495 Reporting Compliance²
50 permits or less	21	12	4
50 to 100 permits	13	6	3
100 to 500 permits	14	2	7
500 to 1,000 permits	7	2	3
over 1,000 permits	7	1	5
Total	62	23	22

¹ Agencies that failed to file 495 report two or more years from 2015 to 2019

² Agencies that filed all 495 reports from 2015-2019 as required.

Once the potential participant pool was grouped by building activity, agencies within each of the sub-groups were organized according to their history of compliance with 495 reporting to DWR (Table 3.1). Those agencies that failed to submit 495 annual reports for 2 or more years between 2015 and 2019 were identified to be agencies struggling with MWELo compliance. In contrast, agencies that were fully compliant with 495 annual reporting during those years were identified as successful in their MWELo management. In total 23 survey respondents from agencies classified as struggling with MWELo and 22 respondents from agencies viewed as having effective MWELo management indicated in survey responses a willingness to participate in the interview process.

The first round of interview respondents represented California agencies with low rates of 495 reporting compliance. Given the experience of respondents in these agencies, the goal of the first round of interviews was to identify the specific barriers to compliance in administering MWELO, those elements that determine the existence and magnitude of challenges to compliance and the practices used or attempted to overcome challenges, if any exist. Once the final subset of potential participants was identified, each designated agency contact was sent a personal email requesting their participation with suggested times to conduct the web-based video interview. From the potential 23 agencies that fit the criteria of struggling with MWELO nine respondents agreed to sit for a one-on-one interview. These nine respondents represented agencies in ten communities throughout California, with one respondent overseeing MWELO compliance in two separate communities.

When the first round of interviews was completed and analyzed, it was determined that a second round of interviews with participants from compliant agencies would be useful. The second round of interviews with compliant-agency staff members helped provide further validation of the drivers that are key to effective MWELO management that emerged from round one and offer further insight into how challenges to MWELO compliance might be overcome. The pool of potential participants for the second round of interviews was determined in the same manner as the first round. Agencies that responded positively to the invitation to participate were further segregated according to community size and level of new development. In the end, 6 additional respondents from the pool of 23 potential agencies agreed to participate in the second round of interviews.

The structure of the one-hour interviews was the same for both rounds. Although MWELO applies to both new construction and rehabilitated landscapes, the majority of MWELO projects are associated with new construction. Given this, the thrust of each interview focused on aspects of MWELO relative to new construction. To not bias participants' responses, questions were open-ended, and respondents were asked to describe the process of achieving MWELO compliance for new development/construction projects in their agency (Appendix B). During the interviews, respondents were encouraged to share the history of MWELO implementation in their community, how their MWELO process evolved and is currently functioning within their agency, what aspects of MWELO were most challenging and, in their

experience and opinion, what DWR and/or their community leaders could do to make MWELO function better.

The number of interviews conducted was, in part, determined by logistics. Many of the agencies in each of the two targeted pools that were contacted did not respond to attempts to schedule an interview. Also factoring in the decision to cease recruitment of additional agencies was the achievement of theoretical saturation (Saunders et. al 2017, Fusch and Ness 2015, Guest et al. 2006). Theoretical saturation is a key element of a grounded theory-based qualitative analysis. In a grounded theory approach data generation and analysis is conducted concurrently. Each independently conducted interview is analyzed immediately in comparison with previous interviews. This “layering” of responses is an iterative process that results in the emerging of themes. For example, over the course of all the interviews in this project, themes related to the barriers and challenges of MWELO administration, the root causes of these challenges and the magnitude of influence they had on the MWELO process began to emerge. The iterative process of layering new information from the most recent interview onto previous responses continues until no new themes emerge and redundancy in data or responses provided by new participants occurs. This is the point at which theoretical saturation is achieved and conducting any additional interviews offers no new information.

Section 3. Results of MWELO Online Survey

To understand the position of public servants assigned to implement and enforce MWELO it was important to get an estimate of the resources local governments provide agency staff to accomplish required tasks. Staff members representing 174 agencies across California responded to the MWELO survey which, as indicated in Section 2, measured the commitment of human and technical resources for the purpose of MWELO.

Survey questions were written to allow for quick responses which required little time commitment from respondent. It was felt that structuring the survey in this manner would encourage a greater response rate. Therefore, participants were provided a list of responses and asked to choose the response that fit the context of their agency. Analysis consists of organizing and calculating the frequency of each response across the 174 agencies.

3.1 Availability and Use of Human Resources for MWELO

The first section of the survey estimates the commitment of human resources by local governments for the purpose of managing MWELO. Of interest in this study was the number of staff members local agencies assigned to oversee MWELO compliance and the level of expertise among these staff members. It is understood for some smaller communities the employment of a formally trained professional in the areas of horticulture, landscape architecture or irrigation systems to assist on the technical aspects of MWELO is not feasible or, due to the small number of projects that trigger MWELO, economically sound. A portion of these communities will elect to contract local professionals to assist with the technical complexities of MWELO.

Staff commitment to MWELO is small statewide. Out of the 174 responses received about 65 percent, or 113 respondents, had 2 or less individuals who manage MWELO projects (Figure 3.1). Of this group more than 15 percent had no staff members assigned specifically to manage MWELO with another 50 percent having only 1 or 2 staff members assigned.

Less than 20 percent of respondents indicated someone with formal training in landscape architecture, horticulture, irrigation systems or similar vocation was employed on staff to oversee the technical aspects of MWELO compliance (Figure 3.2). Likewise, less than 30 percent contract with local trained professionals for assistance with MWELO (Figure 3.3). When combining the responses of these two questions 103 of the 174 agencies, or about 60 percent,

signaled that professional assistance was not available to assist with the technical aspects of MWELo compliance.

The lack of professional guidance to manage the technical aspects of MWELo challenges local agencies to oversee MWELo compliance. For example, few staff members would have the knowledge to understand a soils analysis or align a plant palette evapotranspiration rate with the water budget. Absent available trained experts MWELo compliance agencies must rely on available training to bring their staffs up to speed, but only if resources provided by the community allow such training.

3.2 Agency Investment in MWELo Specific Technical Training and Information Technology

Just over half of respondents (53 percent) indicated their agency supports staff training on MWELo through attendance at MWELo specific workshops (Figure 3.4). This leaves a substantial share, 47 percent, of agencies throughout California that do not provide training for their staff on MWELo. When considering responses to availability of technical expertise, of the 174 responding agencies 57, or about 33 percent, had no access to professional expertise either on staff or through contracted assistance nor did they utilize any outside training to educate their staff on the complexities of MWELo.

For the 92 agencies that did provide training for staff members 46 percent allowed for 6 hours of formal training per year or less (Figure 3.5). The largest share, 26 percent, of agencies that provide training had staff members attend workshops for only 2 hours or less per year. Two percent of respondents had staff members attend training workshops for 10 or more hours per year.

The largest share of agencies that provide MWELo training for their staff members relied on workshops provided by utilities provider Pacific Gas & Electric (PG&E) (28 percent) or the Alameda County public agency StopWaste.org (22 percent) (Figure 3.6). Twenty percent of respondents listed DWR as the next most frequently used provider of MWELo training workshops followed by the California Landscape Contractors Association with 11 percent of positive respondents utilizing their training workshops. The remaining 19 percent of respondents attended workshops provided by 17 additional sources.

All respondents were asked to select which MWELo-related topics would be useful to them and their colleagues to better manage MWELo compliance. Respondents selected from a

list of six subjects that included soils and natural drainage, plant varieties and their water needs, estimating and working with water budgets, function of irrigation systems in relation to landscapes, alternative uses of non-potable water and how to market the benefits of MWELo to the public. Respondents were also given the opportunity to list other topics for which training would be useful.

Each of the six subjects were selected by a share of respondents (Figure 3.7). The most selected topics were marketing MWELo to the public followed by estimating and working with water budgets. These two topics were followed in succession by functioning of irrigation systems, understanding plant varieties, soils and drainage and use of non-potable water. Some of the other topics listed included how to implement and administer MWELo, how to read a landscape plan and check for MWELo compliance, understanding hydrozones and establishing administration and enforcement policies for MWELo.

Very few of the responding agencies were provided information technology in the form of project management software designed or purchased for the purpose of MWELo compliance. Eighty-five percent of respondents indicate no software was available (Figure 3.8).

Figure 3.1a How many people in agency work directly on MWELO?

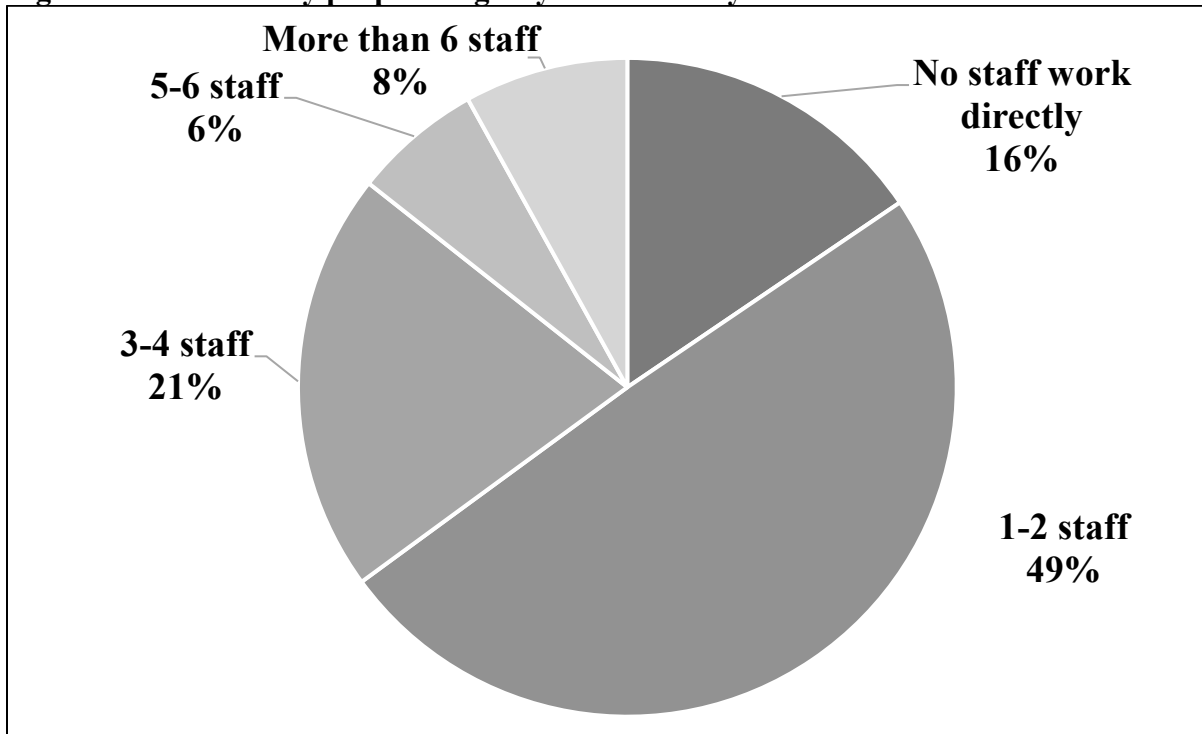


Figure 3.1b Pareto chart of number of people in agency working directly with MWELO?

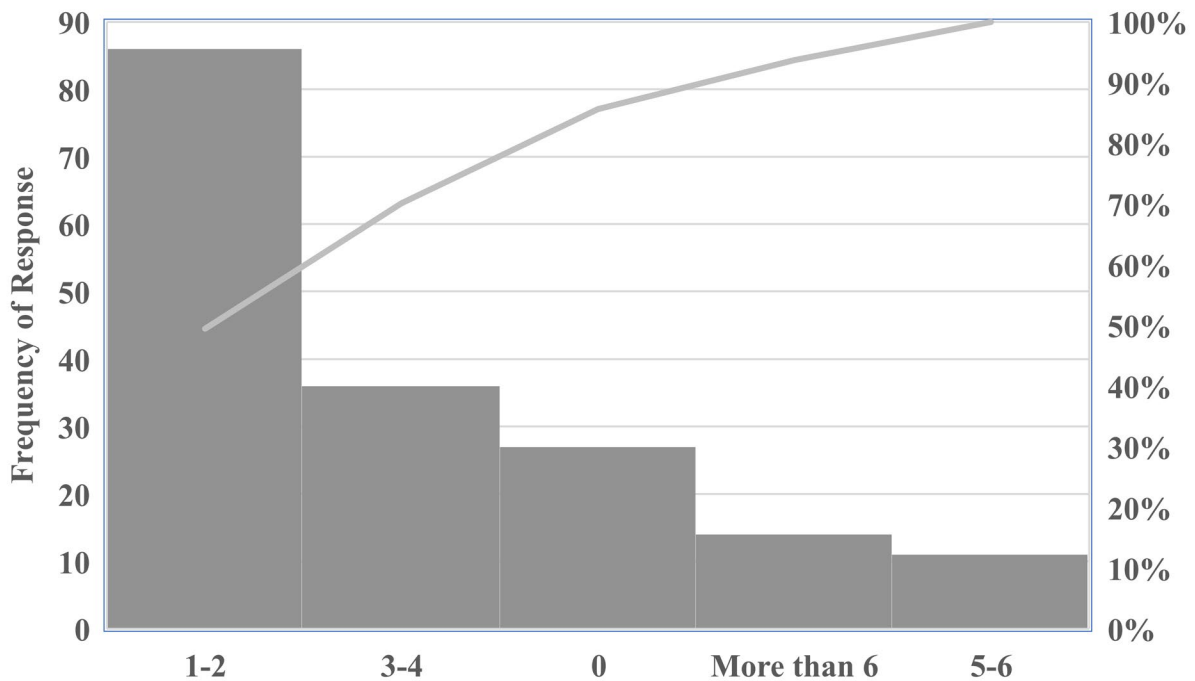


Figure 3.2a Does the agency employ anyone with expertise in landscaping, irrigation, horticulture or similar profession to assist with MWELO?

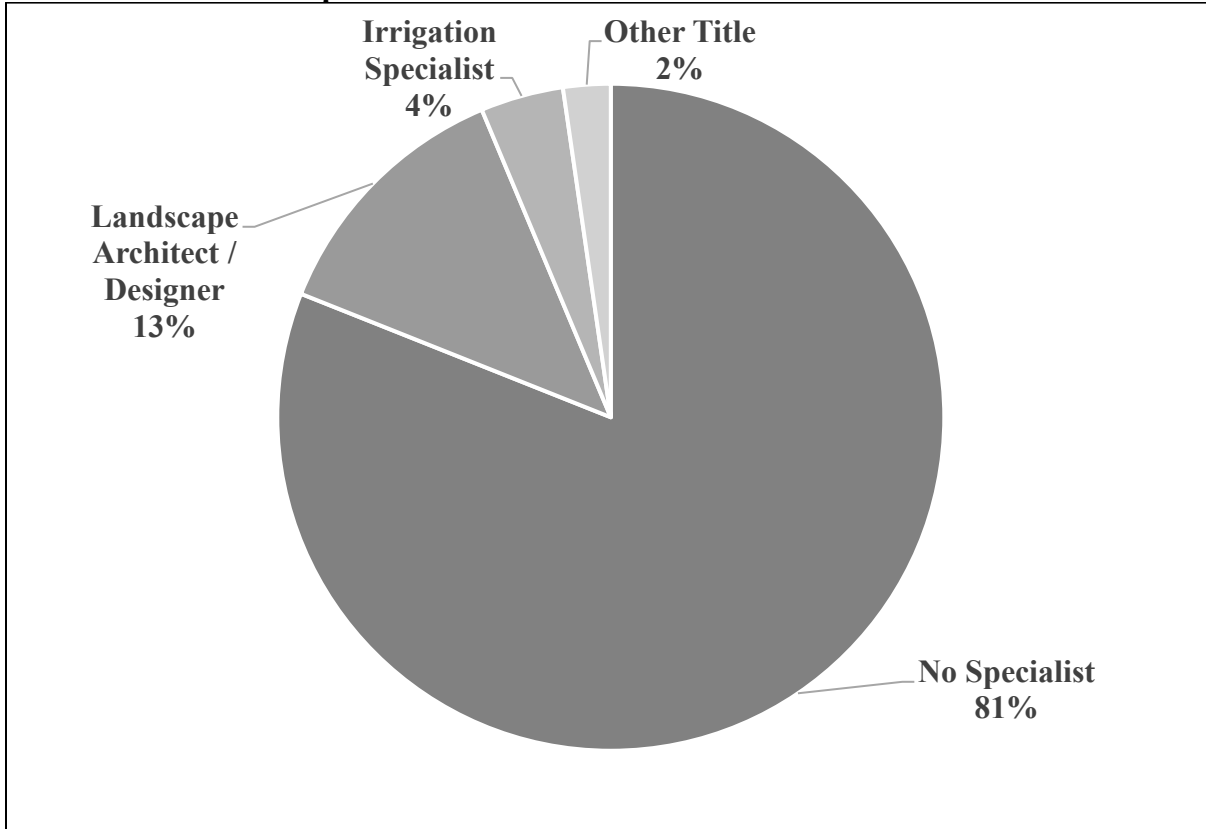


Figure 3.2b Pareto chart of employed agency staff with expertise in landscaping, irrigation, horticulture, or similar profession to assist with MWELO?

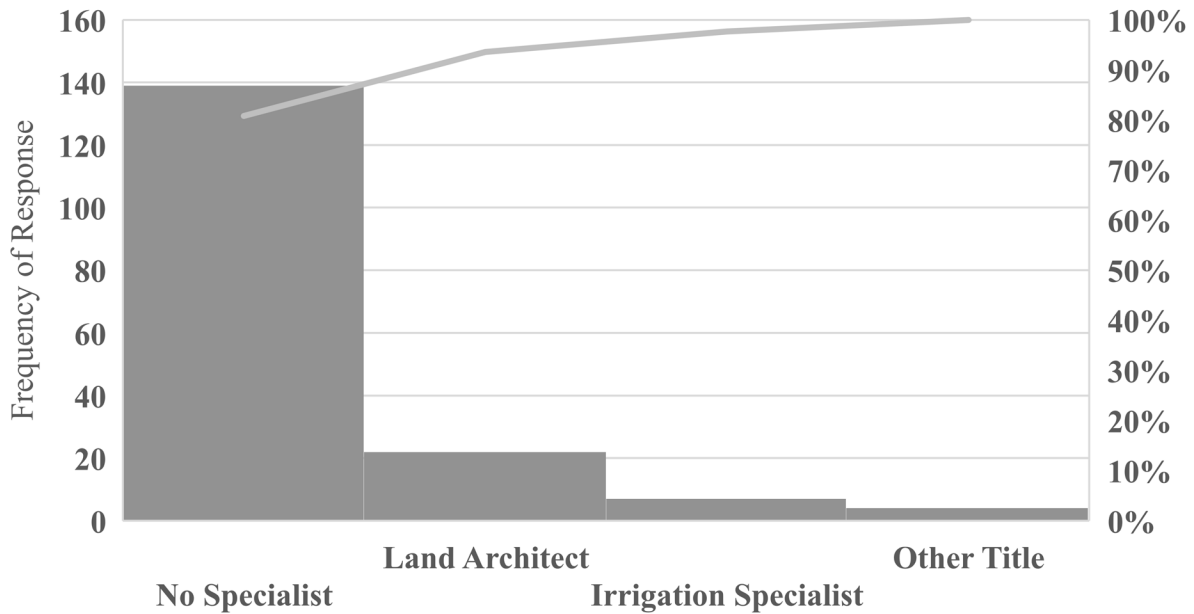


Figure 3.3a Does the agency contract anyone with expertise in landscaping, irrigation, horticulture or similar profession to assist with MWELO?

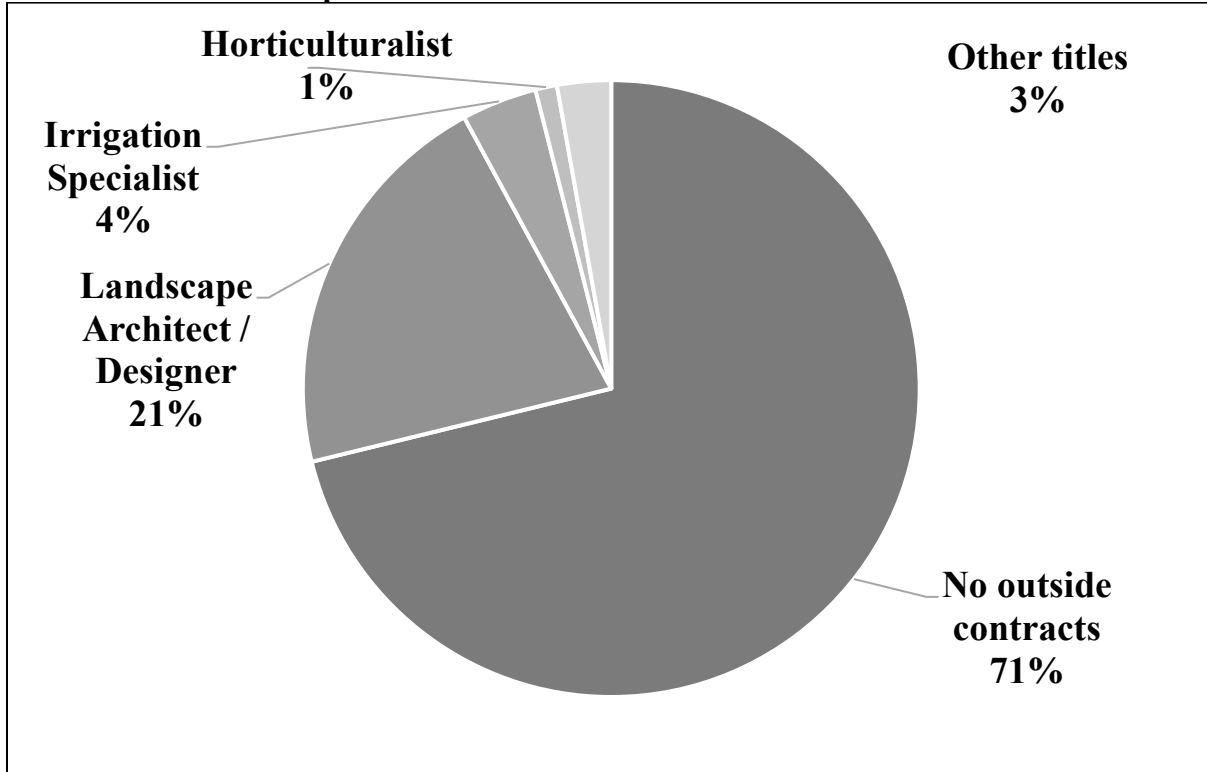


Figure 3.3b Pareto chart of frequency that agencies contract with outside expertise in landscaping, irrigation, horticulture, or similar profession to assist with MWELO?

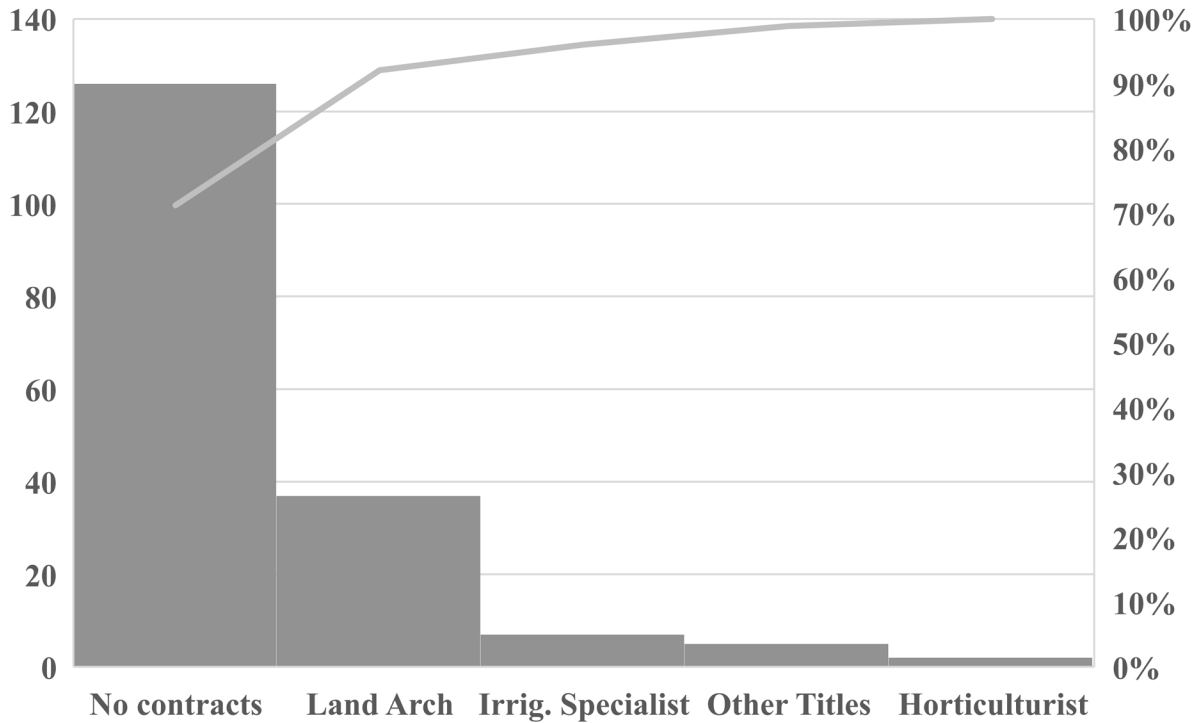


Figure 3.4 Do staff who work on MWELO attend workshops or receive technical training relative to MWELO?

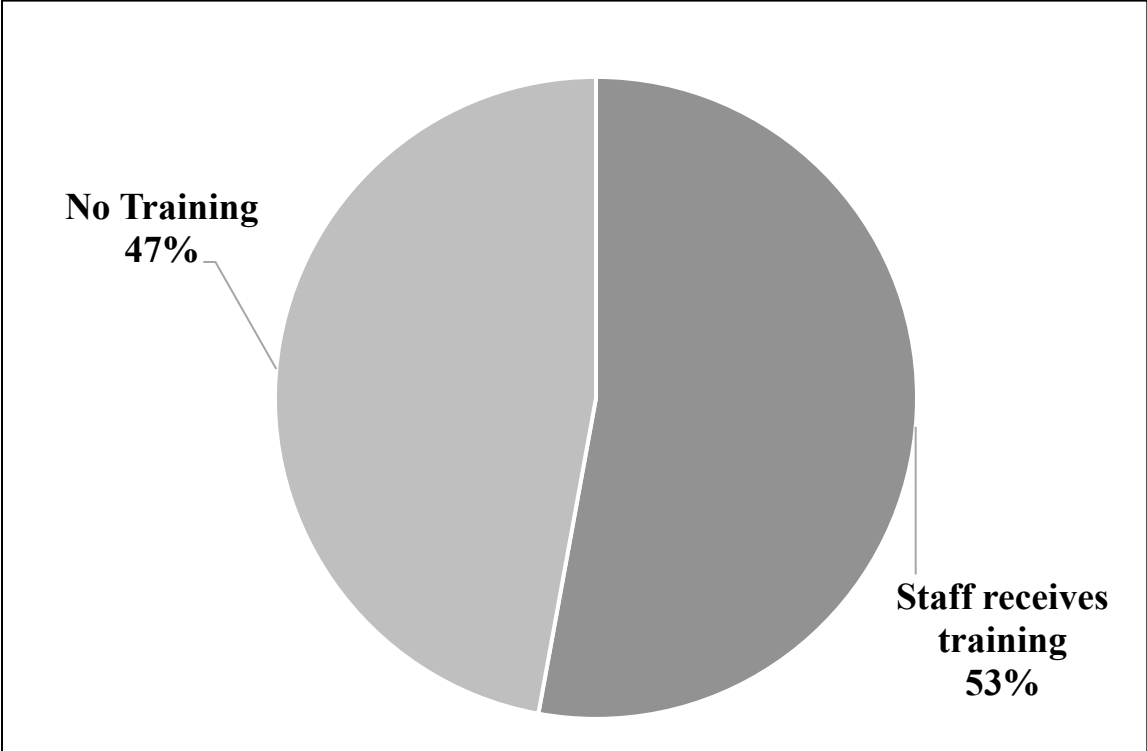


Figure 3.5a How many hours of training per staff member is obtained in a year?

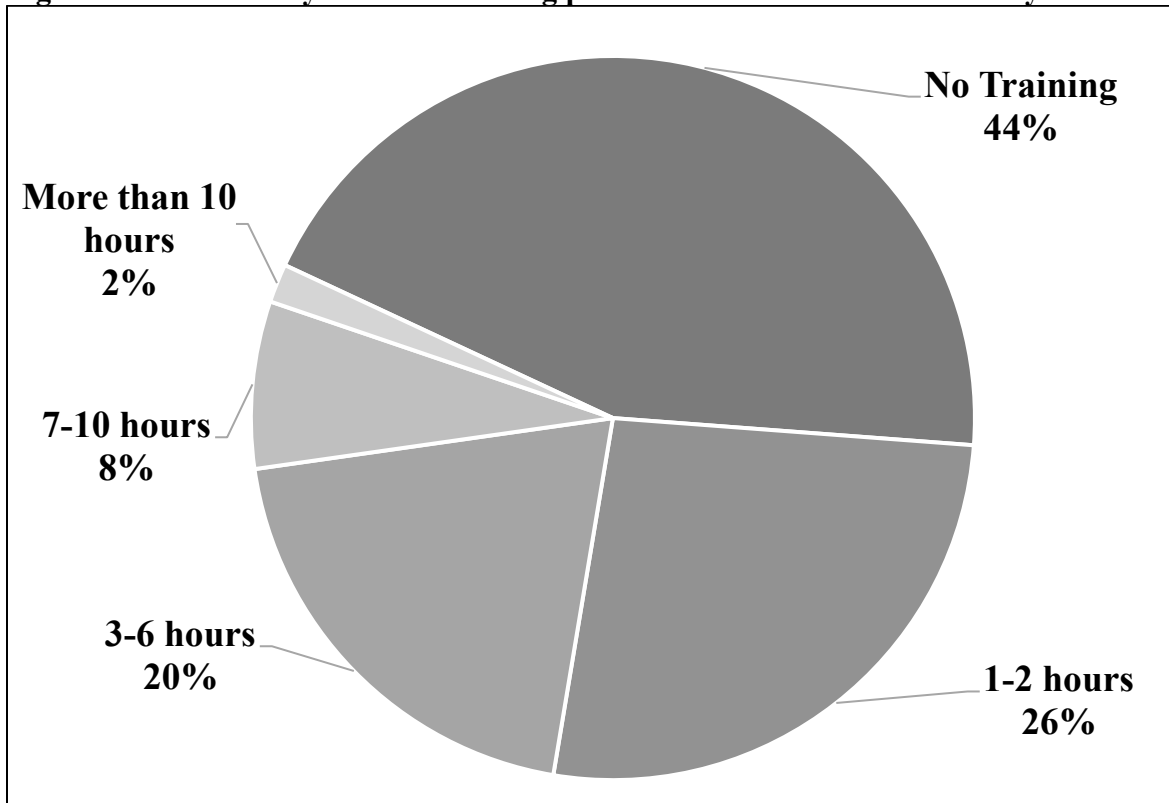


Figure 3.5b Pareto chart of hours of training per staff member is obtained in a year?

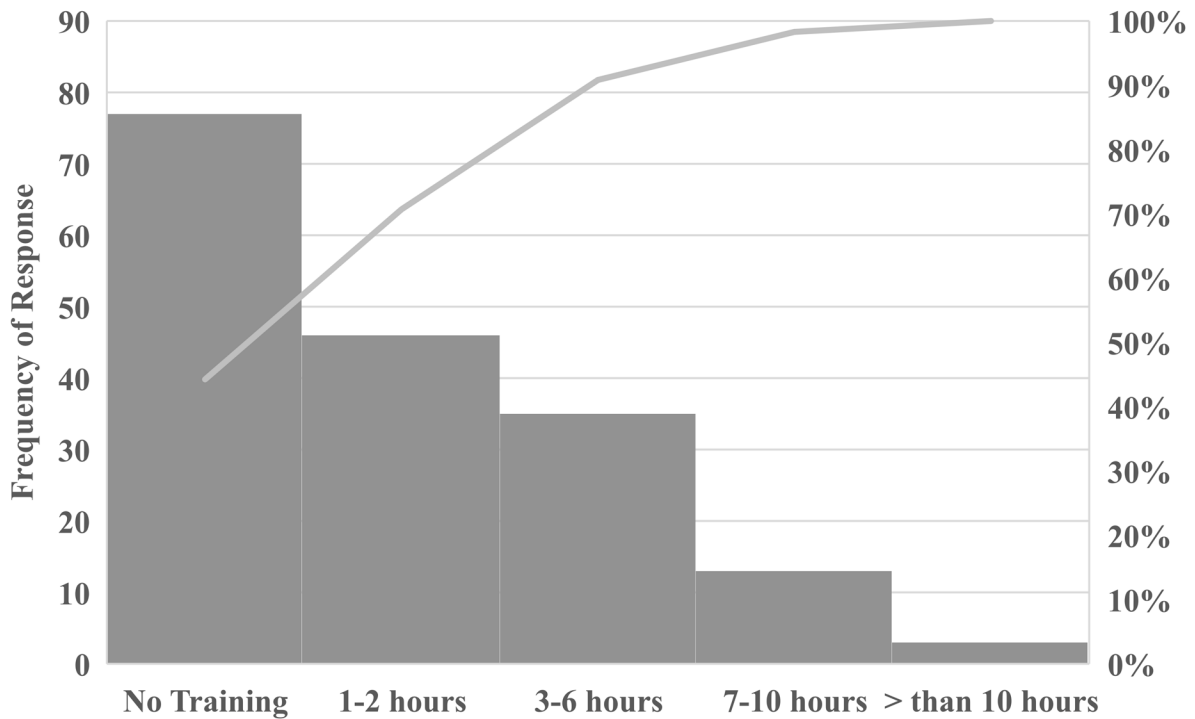


Figure 3.6a If agency staff does receive MWELO training, which organization sponsors the training provided?

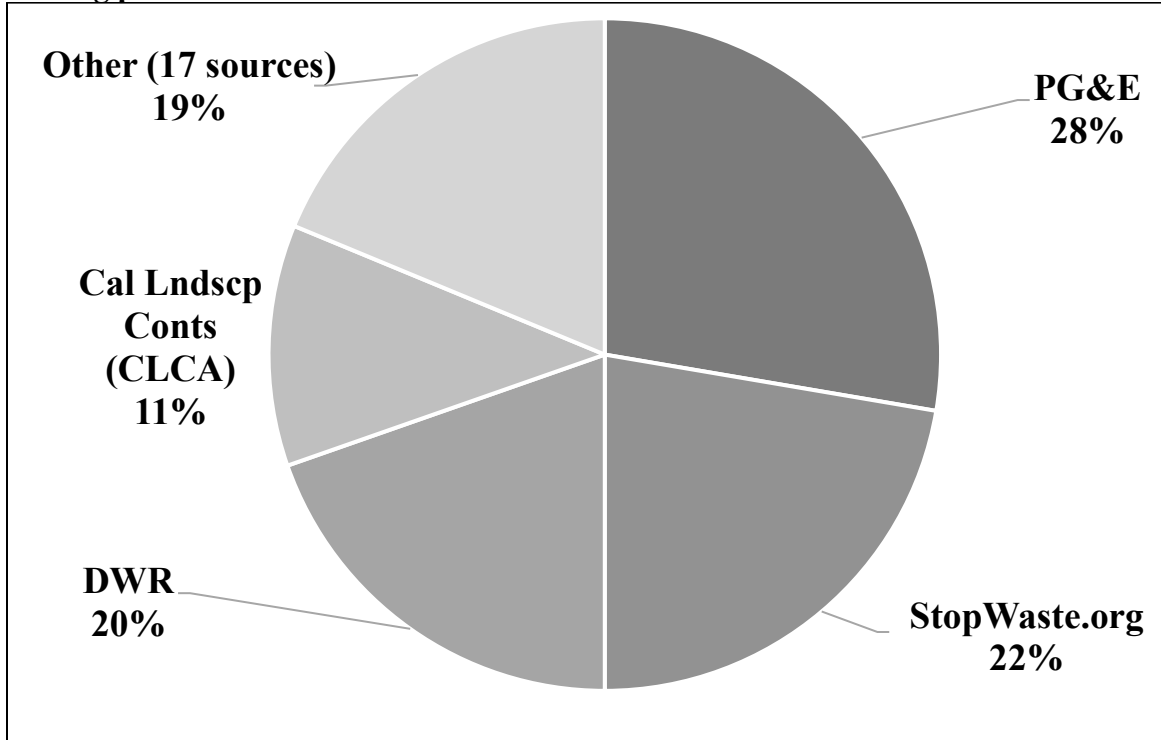


Figure 3.6b Pareto chart of sponsors used for MWELO training?

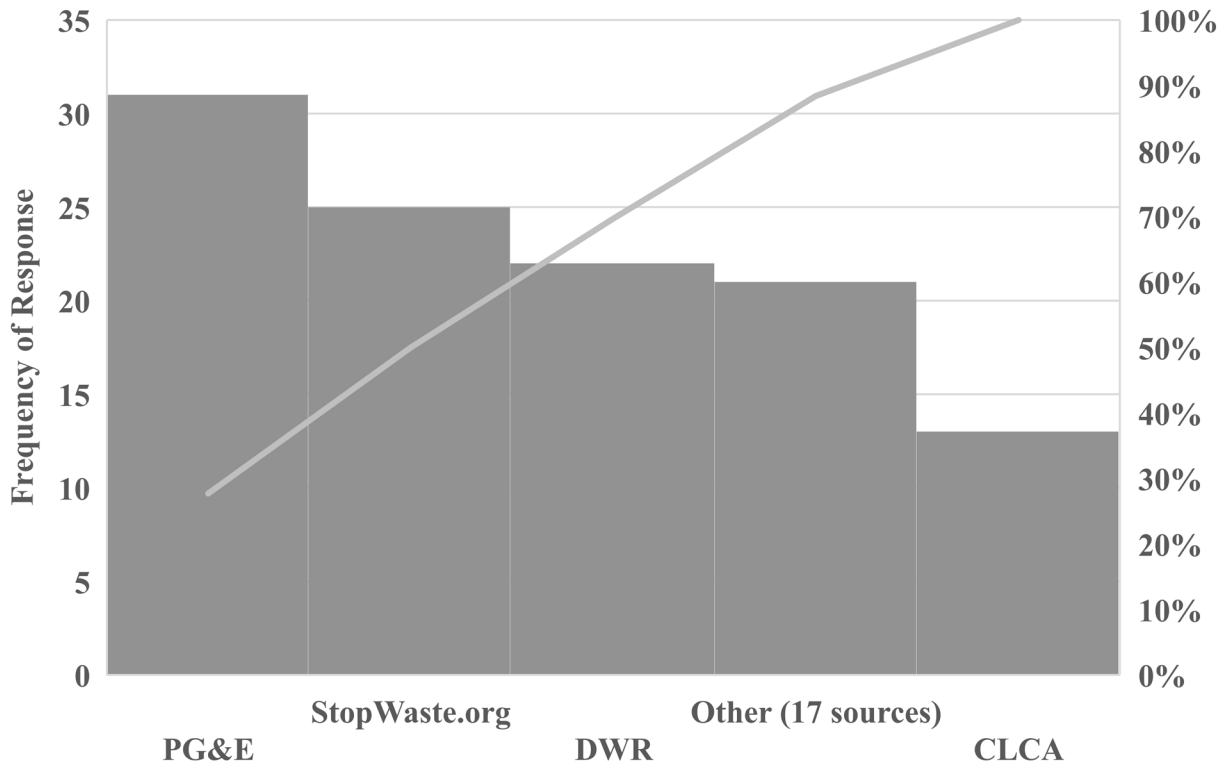


Figure 3.7a What MWELO training workshop subjects would be most useful your agency?

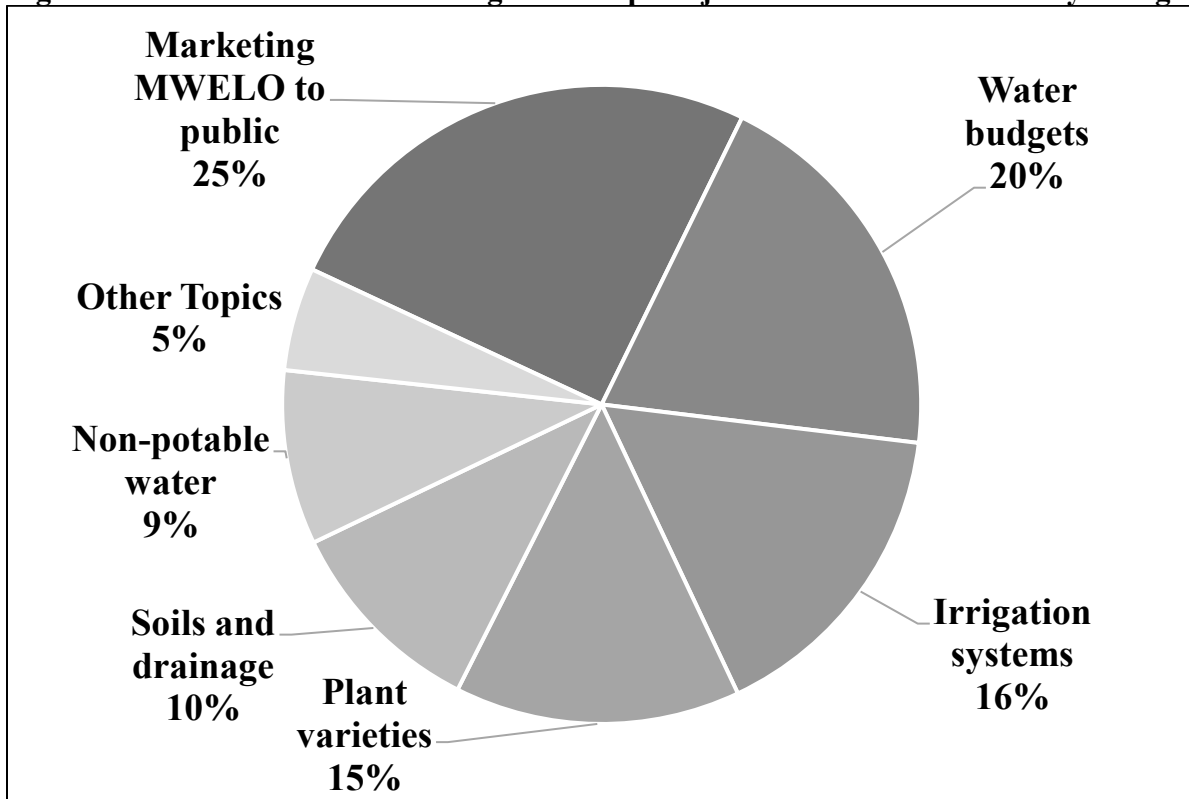


Figure 3.7b Pareto chart of training topics most useful

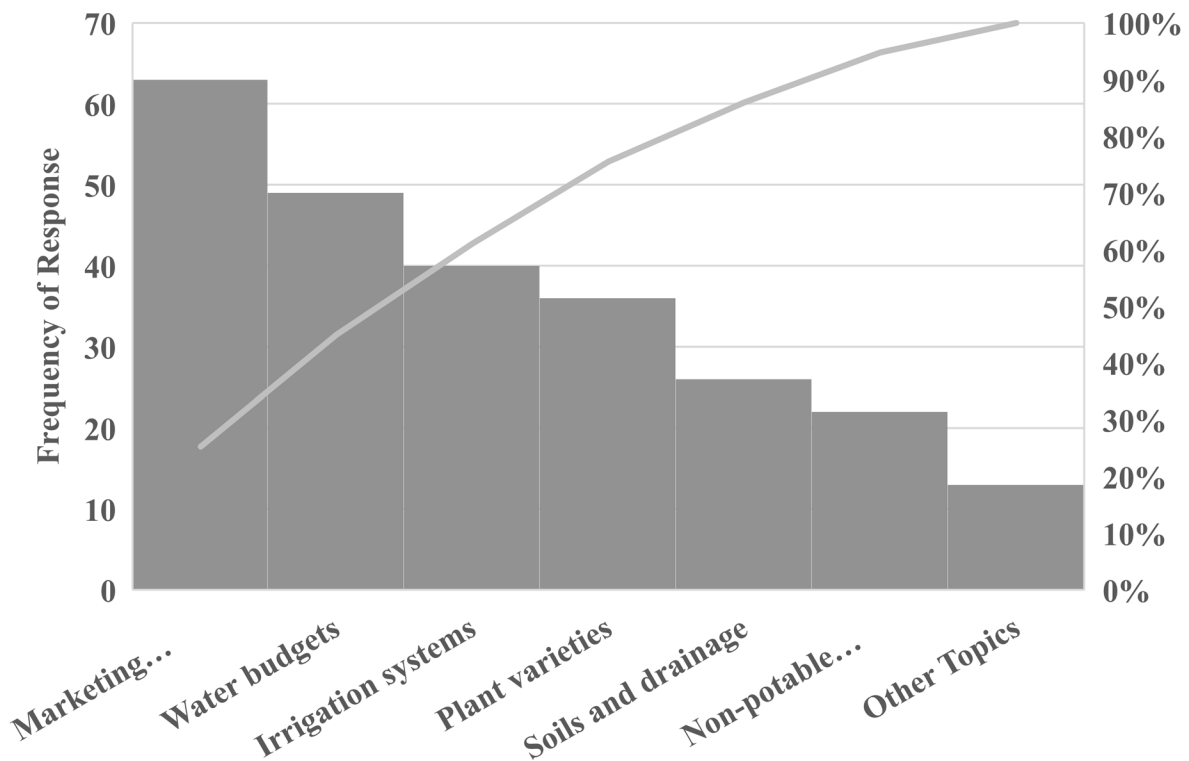
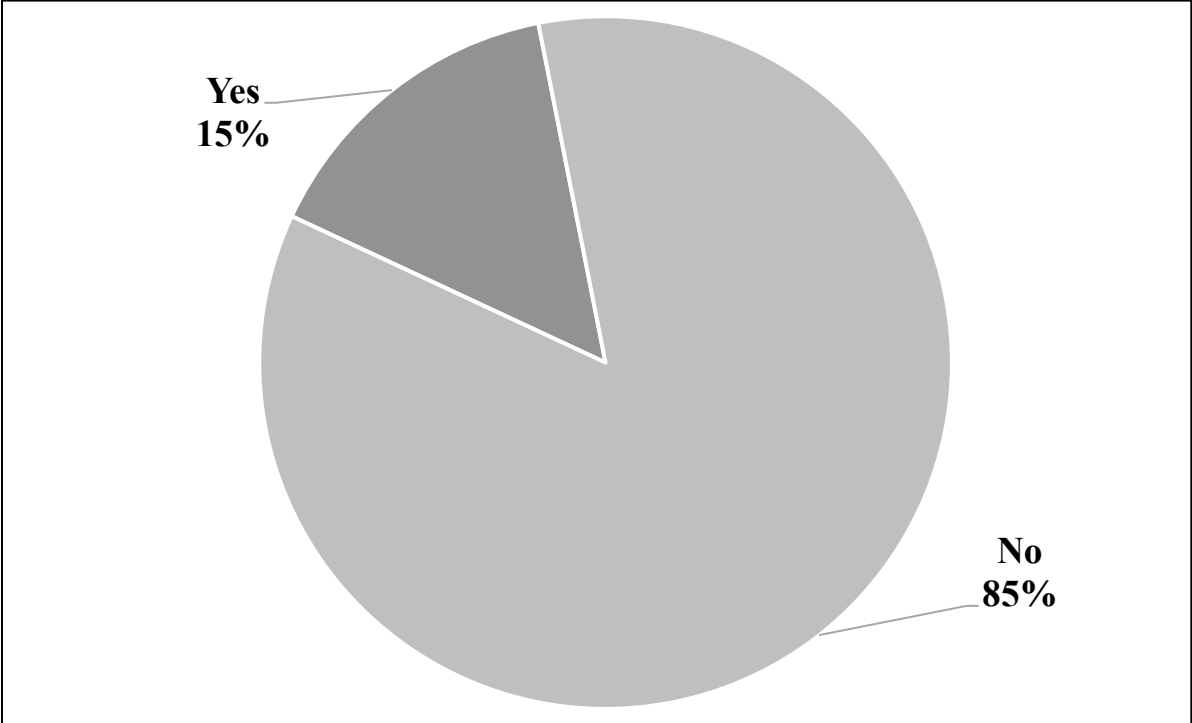


Figure 3.8 Does the agency use dedicated computer software to administer and document MWELo enforcement?



**Section 4. Results of One-On-One Interviews with Select California Agency Staff
Responsible for MWELO Administration**

The information in this section was generated through analysis of two separate series of one-hour, person-to-person interviews with representative respondents from public agencies around California tasked with administering MWELO. Each of the participating agencies also responded to the MWELO survey (Table 4.1 and Table 4.2).

Table 4.1 Survey Responses of Round-One Interview Participant Agencies

	Respondent Agency								
	A	B	C	D	E	F	G	H	I
Avg. number of building permits issued per year	50-100	50-100	50-100	100-500	100-500	100-500	100-500	500-1,000	500-1,000
Number of people who work with MWELO	1-2	5-6	<6	1-2	3-4	<6	5-6	1-2	3-4
Technical expert is on staff	No	No	No	No	No	Yes	No	Yes	No
Technical expert is contracted	No	No	No	Yes	Yes	No	No	No	Yes
Staff Attend MWELO workshops	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes
Number of hours of MWELO training per year	3-6	1-2	3-6	1-2	1-2	1-2	0	3-6	3-6
Has MWELO specific software available	No	No	No	No	No	No	No	No	No

Amongst all interview participants, the number of agency staff members assigned to help manage MWELO is irrelevant of the degree of building activity in the community. Agency B and C in the first-round pool, which each average between 50 and 100 building permits issued per year, have 5 or greater staff members dedicated to MWELO as part of their tasks while Agency H has only 1 or 2 staff members for MWELO despite averaging ten times the number of building permits per year. Only 2 of the 9 participants in round one employs a professional landscaper or horticulturalist, while another 2 contracts with outside experts to assist with MWELO. Amongst round-two participants 2 of the 6 have a trained professional on staff with an additional agency contracting outside expertise. Most interview participant agencies have their staff attend MWELO specific training with the majority attending for 1 to 2 hours per year.

Only one of the participating agencies has dedicated software for the purpose of documenting MWELO activity.

Table 4.2 Survey Responses of Round-Two Interview Participant Agencies

	Respondent Agency					
	<u>2A</u>	<u>2B</u>	<u>2C</u>	<u>2D</u>	<u>2E</u>	<u>2F</u>
Avg. number of building permits issued per year	<50	500-1,000	<1,000	<1,000	50-100	100-500
Number of people who work with MWELO	3-4	3-4	1-2	1-2	1-2	<6
Technical expert is on staff	No	No	Yes	Yes	No	No
Technical expert is contracted	No	No	No	No	Yes	No
Staff Attend MWELO workshops	Yes	Yes	Yes	No	No	Yes
Number of hours of MWELO training per year	3-6	1-2	<10	0	0	1-2
Has MWELO specific software available	No	No	Yes	No	No	No

4.1 The MWELO Framework and Barriers to Development and Implementation

The format for the person-to-person interviews was developed to illicit an unbiased description of the MWELO framework that exists in the respondent’s agency. For this project the MWELO framework consists of the set of processes, people, procedures/tasks and documentation utilized by the agency for the purpose of providing guidance, coordinating, and conducting oversight, ensuring MWELO compliance and maintaining records of accountability.

The interviews reveal a discrepancy across participating communities relative to the degree an established framework for MWELO exists. In some communities, MWELO has been a part of the planning and building process since the law’s inception in 2010. In these communities, local developers are knowledgeable about MWELO and familiar with the documents and procedures required for compliance. In contrast other communities, at the time of the interview, were just beginning to establish procedures and assembling packets of required documentation specific to MWELO. In these communities there is little to no familiarity with

MWELo amongst the local building and development industry and public office staff are challenged in determining how to manage MWELo efficiently while maintaining compliance with state law.

The rate of growth and development in an area over the past decade is a main factor in how well organized MWELo management is within the local government offices. Respondents from communities which have experienced robust and steady growth in housing and commercial development indicate a higher likelihood of an established MWELo framework in place. The volume of new development since 2010 was sustained to a level that allowed more MWELo-experienced staff to emerge in these agencies, as well as more knowledgeable agency clientele. In contrast, respondents from communities in California that have not seen substantial growth since MWELo's inception indicated their MWELo framework is still evolving or non-existent. Those interview respondents from communities with little to no MWELo framework in place expressed an urgent need to quickly develop efficient MWELo processes, procedures and record keeping as local commitment to greater, more sustained development in the area is on the horizon.

The combined statements from the two rounds of interviews identified three key factors that, if not strongly present, constrain and challenge agencies attempting to establish, improve or maintain a functional MWELo management framework. These factors impacted both "non-compliant" agencies from the first round of interviews and "compliant" agencies from round two of the interviews. Analysis of respondent experiences continually identified the needed presence of; 1) leadership in the community from elected officials and from senior staff of the local government agency responsible for MWELo, 2) Project management and communication skills relative to MWELo from the lead MWELo agency staff to all other complimentary government agencies involved in land-use development and planning and to agency clients and 3) technical expertise in horticulture and irrigation systems to assist with the technical complexities of MWELo compliance.

4.2 *MWELo Leadership*

The successful implementation of MWELo in a community is strongly impacted by local politics and government leadership. A share of interview respondents indicates that local elected officials in their community do not fully support MWELo and view the ordinance as a burden to

development rather than a means to conserve water resources. Local elected officials who rely on growth and development to increase the community tax base and finance infrastructure improvement view MWELO as a constraint to their efforts. As a result, little in the way of resources are allocated toward MWELO management or educating the community about the existence, purpose, and requirements of MWELO. In contrast, respondents from communities with leaders who support the water conservation goals of MWELO indicate that local developers and builders have evolved their stance and now view MWELO as a normal cost of doing business that does not deter them from starting future development projects.

The benefit of strong external leadership from elected officials is heightened with strong internal leadership from senior staff members of the agency tasked with MWELO oversight. One of the most important aspects of establishing a well-functioning MWELO is the explicit determination of which government agency takes ownership of the duties and responsibilities of MWELO oversight and compliance. Respondents from both rounds of interviews expressed the existence of internal conflict among their communities' planning departments, building departments and/or public utilities and water providers with respect to determining the agency responsible for MWELO management. Strong intra-agency leadership that champions the cause and goal of MWELO emerged from interview responses as a key element of an effective MWELO process.

Table 4.A ranks the agencies which participated in the two rounds of interviews according to how strong external and internal leadership is relative to MWELO support. External leadership is defined as leadership and support provided to agencies from elected public officials with regards to MWELO oversight. Internal leadership refers to the promotion, inclusion and ushering of MWELO goals and compliance tasks across all aspects of community development and involving other government land-use agencies, public works agencies and water providers in the MWELO process. Scoring in each of the elements in Table 4.A is based on the following criteria.

For external community leadership:

- 3= Elected leaders within the community recognize the importance of urban water conservation, and support the goals of MWELO through public support and by providing community resources for MWELO administration
- 2= Elected leaders within the community view MWELO as a necessary burden and impediment to community development. Compliance is only done to avoid

violation of state law. Minimal resources are dedicated to MWELO administration

- 1= Elected leaders within the community view MWELO as overreach by the state of California. They will not provide resources nor raise development fees to finance MWELO administration.

For internal agency leadership

- 3= Strong MWELO agency leader will be an individual with seniority within the agency. This individual recognizes the importance of urban water conservation and is in position to champion the goals of MWELO with all members of the administrating agency staff. Everyone in the agency will know about and be familiar with MWELO. Furthermore, agency leader educates on the importance of MWELO goals and compliance to other development agencies and water providers in the community and insists that MWELO is part of a development project’s evolution.
- 2= MWELO oversight is designated responsibility of a junior agency staff member. Staff member will be tasked with attending outside MWELO education, becoming the “MWELO expert” and relaying MWELO information back to agency colleagues. Staff member will have little to no communication about MWELO to other development agencies or water providers involved in projects.
- 1= MWELO oversight is assigned to community employee with no authority or seniority. Individual may not be involved in planning and development outside of MWELO.

Table 4A lists the participants from each round of interviews by total score on leadership. Total leadership score is the summation of external leadership and internal leadership.

Table 4.A Measure of Community Leadership Relative to Supporting MWELO

	Respondent Agency														
	Round #1 Interviews									Round #2 Interviews					
	<u>D</u>	<u>B</u>	<u>E</u>	<u>C</u>	<u>F</u>	<u>I</u>	<u>G</u>	<u>H</u>	<u>A</u>	<u>2C</u>	<u>2B</u>	<u>2D</u>	<u>2A</u>	<u>2E</u>	<u>2F</u>
Total LEADERSHIP	5	4	4	4	3	3	3	2	2	6	4	4	4	4	3
External Community Leadership	2	2	2	2	1	1	2	1	1	3	2	2	3	2	1
Internal Agency Leadership	3	2	2	2	2	2	1	1	1	3	2	2	1	2	2

Direct statements that reflect the level of external and internal leadership are listed in Appendix C. Statements are presented in the appendix in the order from lowest scoring agency to the highest scoring agency.

4.3 *MWELO Project Management and Communication*

Effective implementation of MWELO into local land-use development procedures requires a process that supports project management and communication relative to MWELO responsibilities and requirements. Regardless of which local government agency assumes responsibility for MWELO oversight, all other government agencies involved in community development including planning and building departments, public utilities, public works, and the local water provider should be familiar with MWELO and its compliance requirements as part of land-use development planning and project execution. Many respondents cite the lack of familiarity with and communication about MWELO across the various land-use government agencies as a major challenge toward achieving MWELO compliance.

One respondent from the second round of interviews emphasized the importance of continual across-agency communication about MWELO throughout a development projects lifespan. Their agency insists on having meetings with all other inspectors responsible for code compliance in other areas of development prior and throughout the building and development process. In their experience successful MWELO project management is dependent upon good intra-agency communication.

Statements from a respondent in the second round of interviews reiterates the challenges in MWELO management when good intra-agency communication does not exist. This respondent manages MWELO compliance at the county level, which relies on 17 separate water districts. None of the 17 water districts are willing to share water meter data with the county planning office. This makes it impossible monitor water use for irrigation or to assess the efficacy of MWELO in water conservation.

An effective MWELO process also includes good external communication with agency clients about MWELO purpose, goals, and requirements. This entails educating the development industry in the community about MWELO in general but also about how projects will be managed by agency staff to ensure MWELO compliance according to the standards determined by their specific community. Multiple respondents highlighted that many larger developers in California have project sites throughout the state and are confronted with different communities

managing MWELO with different requirements and standards. This creates confusion and frustration, which can lead to push-back on agency oversight.

One respondent emphasized the importance of providing as much information on MWELO as possible to agency clientele. Furthermore, a clear understanding of the requirements and thresholds required for MWELO compliance is imperative. The goal of any agency charged with MWELO project management is to ensure no surprises for agency clients. One suggestion, from respondents with well-functioning MWELO processes, is for MWELO oversight agencies to take extra care in developing their own documentation and checklists for mid and post-project audits. One respondent agency worked directly with irrigation manufacturers and local landscape professionals to develop audit checklists that best served their purpose of ensuring MWELO compliance. Respondent believes that having their own audit forms requires third-party auditors to test the system rather than provide a canned report. Furthermore, the items on the custom audit form are based on water meter readings, which are easily verifiable by agency personnel. Providing their own audit forms and testing requirements also alleviates some of the conflict-of-interest issues related to agency clients hiring their own “experts” to assure MWELO compliance.

Table 4.B ranks the agencies which participated in the two rounds of interviews according to how strong external and internal project management and communication are relative to MWELO support. Internal project management includes the consistent educating and promoting of MWELO tasks and requirements for projects to agency staff as well as other land-use agencies involved in community development such as planning department, building department, public works departments and area water providers. External management refers to providing adequate and consistent information about MWELO purpose, goals and compliance procedures to development clients and the public. Scoring in each of the elements in Table 4.B is based on the following criteria.

For internal project management:

- 3= MWELO oversight is a consistent part of development project management. All pre-construction planning meetings for projects will include MWELO as part of the agenda. MWELO tasks and expectations are well communicated from administrating agency to all other development agencies and water providers in the community. Communication about MWELO compliance and expectations are communicated consistently during project construction and final inspections

to determine project completion and granting of occupancy permits. Designated, trained staff with a defined MWELO process.

- 2= All staff members of agency responsible for MWELO oversight are trained and knowledgeable about MWELO requirements for compliance. Some communication occurs with other development agencies but only during pre-construction phase. No communication between oversight agency and water provider takes place. One to two designated staff may be able to assist clients with MWELO but not all staff are trained, have limited or minor staff turnover, and a limited defined MWELO process.
- 1= MWELO tasks and responsibilities are only known by a small share of agency staff. MWELO discussion is not part of normal project planning meetings. No designated staff responsible for MWELO, or a defined MWELO process.

For external project management:

- 3= MWELO oversight agency has developed their own standardized MWELO forms and checklists that clearly identify the requirements and thresholds that must be met for a project to achieve MWELO compliance. Furthermore, agency staff are experienced, and adequately trained to guide agency clients through the MWELO process.
- 2= Agency has adopted the standardized forms from DWR and provides little to no additional information on MWELO requirements.
- 1= No formal documentation forms are available for agency clients. Necessary application materials and post-construction audits are done ad-hoc with no standard format. MWELO expectations are not well communicated.

Table 4B lists the participants from each round of interviews by total score on project management and communication. Total project management and communication score is the summation of internal and external project management and communication.

As the scores indicate, only 3 of the 15 agencies represented in Table 4B had internal management and communication scores above 1. Educating, informing, and communicating MWELO purpose, goals and compliance requirements to other complimentary land-use agencies is a widespread challenge. Development projects typically involve multiple government agencies assuming various roles. For example, a new housing development in a community could require input and oversight from the local planning department, building department, public works department and/or public utilities provider. Lack of a clear mandate as to which agency is responsible for MWELO along with a failure to communicate and incorporate MWELO requirements into the development process constrains compliance.

Scores related to external communication and management were only slightly higher across the 15 agencies interviewed. Many respondents cited the education of agency clients

about MWELo procedures and requirements as the most time-consuming aspect of project management for MWELo. Professional developers and builders across the state usually have some level of experience with MWELo and were noted by respondents as slightly easier to educate than the public. None the less, with MWELo procedures and requirements not being standard across agencies in California, guiding developers towards MWELo compliance is still time consuming for agency staff and their clients.

Table 4.B Measure of Project Management and Communication Relative to Supporting MWELO

	Respondent Agency														
	Round #1 Interviews									Round #2 Interviews					
	<u>D</u>	<u>B</u>	<u>E</u>	<u>C</u>	<u>F</u>	<u>I</u>	<u>G</u>	<u>H</u>	<u>A</u>	<u>2C</u>	<u>2B</u>	<u>2D</u>	<u>2A</u>	<u>2E</u>	<u>2F</u>
Total PROJECT MANAGEMENT	6	3	3	3	3	3	2	2	0	6	4	3	3	3	3
Internal: Across development agencies and water providers	3	1	1	1	1	1	1	1	0	3	2	1	1	1	1
External: With agency clients	3	2	2	2	2	2	1	1	0	3	2	2	2	2	2

The scores in Table 4.B were determined based on the statements of respondents relative to their respective communities. Direct statements that reflect the level of external and internal project management and communication are listed in Appendix C. Statements are presented in order from the lowest scoring agency to the highest scoring agency.

4.3 *Technical Expertise*

Availability of human and technical resources represent the third factor influencing how established an agency’s MWELO process is. Many medium and small sized communities have limited staffing employed in public offices. The requirement to administer MWELO brings an added workload that falls on existing staff, many of which already assume multiple public administration roles. Furthermore, these staff members have little to no background in landscaping, water budgets or any of the other technical aspects of MWELO.

Some larger communities bring on new staff members who have a background in landscaping or horticulture for the purpose of managing MWELO compliance. These communities are fortunate to have the resources and enough community growth to afford and justify a staff position only for MWELO. From the combined testimony this scenario of hiring a staff position for MWELO is rare across the state. Many communities lack the funds and political will to create a position for MWELO compliance. An alternative route, used by many respondent communities, is to utilize outside expertise to assist in the technical aspects of

MWELO. A key consideration when using outside experts is determining how those services are compensated. Many respondent communities directly contract with landscape professionals in the area and use developer fees to cover the costs. An equal number of communities require the developer or builder to hire a licensed professional to certify application materials and irrigation audits. This later form can create a conflict of interest as the expert may be willing to overlook non-compliance by the developer who is paying their fee.

Many communities interviewed neither employ nor contract with landscape professionals for the purpose of MWELO. In short, these communities assign the requirements of MWELO management to an existing staff member, who is then left to figure out the technicalities on their own.

Table 4C lists the participants from each round of interviews by total score on technical expertise. Technical expertise relates to the availability and use of trained and licensed horticultural professionals in completing and monitoring required MWELO tasks for compliance.

- 3= Have horticulture professional on staff or contract with an outside horticulture professional who's paid by agency.
- 2= Contracted horticultural professional is hired and paid by agency client, but agency staff members are well trained on MWELO.
- 1= Contracted horticultural professional is hired and paid by agency client and agency staff have minimal to no training on MWELO.

Table 4.C. Measure of Technical Expertise Available Relative to Supporting MWELO

	Respondent Agency														
	Round #1 Interviews									Round #2 Interviews					
	<u>D</u>	<u>B</u>	<u>E</u>	<u>C</u>	<u>F</u>	<u>I</u>	<u>G</u>	<u>H</u>	<u>A</u>	<u>2C</u>	<u>2B</u>	<u>2D</u>	<u>2A</u>	<u>2E</u>	<u>2F</u>
TECHNICAL EXPERTISE	3	2	3	2	3	1	1	2	1	3	2	3	2	2	2

The scores in Table 4.C were determined based on the statements of respondents relative to their respective communities. Direct statements that reflect the need for technical expertise and the availability of expertise are listed in Appendix C. Statements are presented in order from the lowest scoring agency to the highest scoring agency.

Section 5. Discussion of Results, Challenges and Recommendations

The combined survey results and interview testimonies from local government agency representatives demonstrate the struggle many California communities have with integrating MWELO into their community development processes.

The survey results indicate many communities invest few if any resources, human or technical, toward the administration of MWELO. Statements from interview respondents indicate that the low-level of investment toward MWELO compliance is a manifestation of the low priority elected officials and senior agency staff place on MWELO and its objectives. This attitude toward MWELO stems, in part, from the view that MWELO is a burden on community development and growth and, therefore, counters the ambitions of elected leaders and senior agency management. Furthermore, the technical complexity of MWELO discourages many agencies from committing more than the bare minimum toward MWELO compliance. Agency leaders don't understand MWELO or how to project-manage to ensure MWELO compliance and, therefore give MWELO low priority.

Given this stance, many land-use agencies assign MWELO implementation and compliance tasks to junior staff members who have little to no training in horticulture, landscaping, or similar vocation. Often, the tasks of MWELO are added to the staff member's existing slate of responsibilities. These junior staff members have no seniority or authority to mandate other community development colleagues, either within their own agency or across other land-use agencies to fully incorporate MWELO standards into the development process. In many local governments communication with other entities involved in community development is non-existent. As such, developing a functional MWELO management process is difficult to achieve.

Relying on a junior staff member to formulate an agency's MWELO management process can lead to inconsistencies. Staff turnover due to downsizing or job changes can eliminate any form of institutional knowledge relative to the MWELO process or compliance requirements. Not having agency-wide involvement in developing the MWELO management process can be a source of frustration for both internal government colleagues and agency clients and act as a barrier to compliance.

Technical expertise with regards to horticulture, landscaping, and/or irrigation systems, when available alleviates some inherent constraints to MWELO administration. As noted in the

interview results almost all respondents from both “non-compliant” and “compliant” agencies commented on how complicated MWELO is to fully understand. The few communities with public and upper-management commitment to MWELO compliance either divert current resources or increase fee rates relative to MWELO to fund the hiring of a horticultural specialist or contract the services of a local specialist to act on behalf of the agency to ensure MWELO compliance. Other communities place the burden of supplying and paying for third-party technical experts to complete documentation and audits necessary for MWELO compliance on agency clients. Requiring agency clients to secure and fund technical experts to affirm MWELO compliance carries conflict-of-interest risks. If the expert is working on behalf of the client and is being paid by the client there is a greater chance of projects passing MWELO audits and inspections regardless of compliance being achieved. Many agencies do not have access to expertise in any form and must, as one interview respondent stated, “do the best they can”. Agencies attempt to overcome staff deficiency in technical knowledge by sending staff members to MWELO specific training, but as the survey responses demonstrate up to 70 percent of agency staff receive two hours or less of MWELO training per year and almost half (44 percent) of MWELO-administering agencies fail to attend MWELO training at all. Furthermore, interview respondents indicate that MWELO training attendance is a “one-and-done” proposition with no follow-up or continued MWELO education training.

The lack of technical expertise and resources dedicated to MWELO administration constrains all phases of MWELO compliance from pre-project application through to final audits for occupancy. MWELO compliance is given the most attention during the pre-construction application period. All interview respondents offered descriptions of some MWELO application process that includes procedures and requirements applicants must follow when proposing new development projects. The pre-construction application period is where outside third-party experts are consulted to ensure proposed water budgets, plant pallets and all other project characteristics meet MWELO standards. In many instances checks and inspections for compliance stops after applications have been approved. Many interview respondents stated that once a project is approved and construction begins no other tasks related to MWELO occur. Many respondents stated they simply did not have enough staff members or expertise or procedures in place to conduct site visits and MWELO-related inspections during construction.

Some respondents even mentioned that post-construction audits of irrigation systems and check-off of MWELO compliance is not part of final project inspections.

5.1 Respondent Statements on Challenges to Administering MWELO

During one-on-one interviews respondents were asked to cite the biggest challenges they experience with regards to MWELO administration and enforcement. The challenges listed below come directly from interviewees. These statements reveal the struggles many agencies' staff members experience as a result of the constraints and barriers to MWELO compliance revealed in the survey data and interview testimony.

Lack of Technical Expertise

- The complexity of MWELO, with the required understanding of WUCOLS and the calculations required of the review process is intimidating for the typical planner.
- There is confusion about whether the State of California requires certified landscape professionals to sign off on MWELO documents.
- It is very challenging for planners to implement MWELO ordinance because it is so technical and complex.

Lack of Leadership

- The biggest challenge is meeting the MWELO requirement of needing one in seven new house lots to undergo agronomy tests and irrigation audits. The city the respondent represents only requires her to inspect the first production home built in a tract housing development and the last production home built in the development. City does not have a system set up to easily track the 1-in-7 lots and respondent is extremely limited in time and would not be able to meet this requirement without more staffing, which city is unable to provide.
- Biggest challenge is to figure out the politics of enacting MWELO. To do MWELO correctly the city needs to hire or contract expertise. To hire expertise, they need to raise developer project fees to meet cost of staffing an expert. There is little political will to raise fees while also trying to promote development.
- Putting the burden on the small municipalities that also face the political pressure of allowing development is a challenge for MWELO.
- It is challenging to get agency staff to focus on MWELO and its requirements because MWELO is just one of many ordinances related to planning, development and building that must be complied with. Also, the complexity of MWELO is makes is less appealing to deal with.
- Collection of documents was a big challenge to overcome. When MWELO program started the planning staff thought extensive documentation was not necessary.

Respondent fought to make documentation a necessary aspect of the building/development process. They argued this is a state mandate and is not optional. The community must comply with state law.

- Enforcement is the biggest challenge due to lack of expertise and support from elected leaders and public to cover costs of enforcement.
- MWELO is a statewide “blanket” ordinance that is problematic to many of the smaller counties and jurisdictions in the state.
- There needs to be a culture shift in what is acceptable as landscaping. There are still a lot of people who want to have the full grass lawn for their yard.

Lack of Management and Communication

- The language in the MWELO is not clear on what the minimum requirements should be for landscaping or what credentials are required of the water auditor.
- Due to lack of knowledge on landscaping, most planners default to landscape architects which ends up creating hit-and-miss policy compliance.
- MWELO should be administered by the water providers, not the municipalities. Inspection components should be on the water providers. They are larger agencies, and they have the resources needed to monitor for MWELO.
- One challenge with water is the lack of communication between water wholesalers (water districts), county water departments and community planners and building inspectors.
- It is a challenge to determine the best time between when the water meter is installed, and the final irrigation system audit takes place. The best scenario is to not stamp the approval documents for the occupancy permit until the audit is complete and system complies. Developers have hard time with this as many times houses are already sold and people want to move in.
- Many large building sites have turnover in superintendents on-site. These changes are challenging as the larger development companies have sites all over the state of California with different communities treating MWELO with different requirements and standards. It is difficult and confusing for on-site superintendents as MWELO requirements are not treated the same in all locations. This scenario leads to push-back and frustration.
- There is no way to monitor the water use for irrigation or planting as this is collected by the water districts and they will not share information with planning office. Meter data is considered proprietary. Respondent is frustrated as they have no way of knowing if their efforts in enforcing MWELO is making a difference in water use or not. Lack of coordination between water districts and planning office makes MWELO challenging to monitor and enforce.
- Required timeline for installation of projects is unclear. Nothing in the ordinance states that the project needs to be completed (landscape installed) prior to issuance of occupancy permit. This is more of a problem with custom home builds and smaller projects.
- One challenge respondent face with MWELO requirements. They live in a relatively drier climate compared to many parts of California. Therefore, they are required to use low-water-use plants in their landscapes to make compliance calculations work. These

plants have a very short life (~5 years or less). This adds an expense for the developer as the plants will die and need to be replaced. If MWELO allowed for medium-water-use plants in their area the landscapes would likely last longer (25 years). Respondent feels MWELO forces the use of a small palette of plants species (~20 plants) that limits the creativity of landscape architects and life of landscape.

Challenges specific to 495 Reporting

- We were challenged to submit the Section 495 annual report for a couple of years due to miscommunication between Planning Department and Department of Public Works. Both thought the other was submitting so neither submitted.
- Respondent finds ambiguity in what should be included in the annual Section 495 report. Projects can be open over multiple years and respondent is unsure as to how the count of annual projects should be conducted. Should it contain only new projects that start during the year, projects that are completed in the year or projects that are continuing during the year?

5.2 *Stated Recommendations for DWR to Improve MWELO*

Interview respondents were also asked what, in their opinion, the Department of Water Resources could change or provide to decrease the barriers to MWELO implementation and compliance. The recommendations received fell into one of three categories. 1) Improvements to MWELO training or education, 2) Changes to MWELO itself and 3) Tools and services DWR could offer to assist with MWELO.

Recommended changes to MWELO training

- Some of the training offered by DWR and StopWast.org tends to get too technical (“deep in the weeds”) to a point beyond most planners’ skills.
- MWELO training received from DWR and StopWaste.org focuses too much on how to conduct the preliminary review. A greater need exists for training on how best to project-manage for MWELO. If the ordinance could be broken down and the technical aspects of it take out, then a clearer understanding of the steps and the proper order of occurrence could be understood. Respondent believes this would help planners. Then people involved could easily figure out what steps in the process they are responsible for. “I don’t need to know how to calculate a water budget, I need to know that there needs to be a water budget included and an inspection of that water before approving the next step.”
- Training that focuses on enforcement examples from other municipalities would be useful. How are different communities conducting enforcement tasks? Specifically, how are smaller municipalities monitoring for MWELO while keeping costs down?

Recommended changes to MWELO itself

- It would be good if DWR had “realistic expectations” with regards to field inspections and enforcement and what that part of the process should “look like”. There is uncertainty on what inspections should entail.
- DWR should be less “nicky-picky” and just focus on water budgets being met. Make the whole process simpler. Make it all about meeting the water budget. “People pushing the buttons on their irrigation system have no idea what they are doing.”
- State should promote use of a water budget-based rate system for pricing municipal water.
- DWR might think about breaking down MWELO into a uniform checklist of what will be required for each development site. Making requirements uniform throughout the state would be helpful. Now there is no consistency.
- DWR should simplify MWELO and its requirements for those smaller communities that do not have resources or expertise. There are aspects of MWELO which are not important to small communities. They do the checks required by the ordinance but don’t put much value of what is being monitored. For example, the soils analysis is not necessary respondent believes.
- Need a way to require water districts to share meter output so it can be used to monitor water use and compliance.
- The soils analysis portion of the application process is not necessary and makes the MWELO application process too cumbersome. They don’t see the benefits gained from the soils analysis. Would recommend to DWR to remove soils analysis requirement.

Recommended tools and services DWR could offer to assist with MWELO

- More detailed explanation on how to perform certain calculations required by MWELO.
- It would be beneficial and very useful to have a flow chart to follow and screen certain projects out.
- DWR should offer more outreach for the community in general on why MWELO exists, what its purpose and goals are and why MWELO is necessary. Public outreach and education geared toward changing attitudes about landscaping would be beneficial.
- The building industry should be viewed as a main driver in the success of MWELO and respondent feels that DWR should work to get this industry on board with regards to the look, feel, and economic benefits of MWELO compliant landscapes. Buy in from building industry will make the job of government agencies much easier.
- DWR could help with more research and outreach to larger developers around the state. Somehow getting to the key people in each company to make them more aware that MWELO is statewide and must be complied with statewide. Let them know there are consequences to not having a good MWELO plan.

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Appendix A: Online Survey Questions

MWELO Survey

Our research team at the University of California Davis, with support from the California Department of Water Resources (DWR), is conducting an independent and confidential study on the challenges California municipalities, counties and regional water districts face in implementing the state-mandated Water Efficient Landscape Ordinance (M)WELO. The purpose of this project is to inform DWR administrators and California legislators on the struggles California cities, counties and water districts have in administering (M)WELO and offer recommendations as to how DWR and the State of California can best help these efforts by local communities. Responses to this survey will provide measures of resources, both human and technical, currently used across the state to implement (M)WELO and assess the level of resources needed to properly comply with the state (M)WELO mandate. All responses are confidential, and participation is voluntary.

Section 1) Human resources utilized for (M)WELO administration and enforcement: Responses to these questions will help DWR understand the optimum number of people and level of expertise needed for agencies to efficiently implement (M)WELO.

1.1 How many people employed by your city, county, or district work directly in the administration and enforcement of your (M)WELO?

- 0
 - 1-2
 - 3-4
 - 5-6
 - More than 6
-

1.2 Does your city, county or district directly **EMPLOY** any of the following licensed or certified professionals to review, process and provide oversight to (M)WELO projects? PLEASE CHOOSE ALL THAT APPLY

- Landscape Architect / Designer
- Irrigation Specialist
- Ornamental Horticulturalist
- We have no specialist EMPLOYED and on staff for (M)WELO administration
- We EMPLOY a Landscape Professional with the following title for the purpose of (M)WELO administration (Please List Title)

1.3 Does your city, county or district **CONTRACT** any of the following licensed or certified professionals to review, process and provide oversight to (M)WELO projects? PLEASE CHOOSE ALL THAT APPLY

- Landscape Architect / Designer
- Irrigation Specialist
- Ornamental Horticulturalist
- We have no outside CONTRACTS with specialists for (M)WELO administration
- We CONTRACT a Landscape Professional with the following title for the purpose of (M)WELO administration (Please List Title)

Section 2: Technical training utilized for (M)WELO administration and enforcement:

Responses to these questions will help DWR understand the investments made by statewide agencies to train their staff on (M)WELO, the usefulness of this training and what (M)WELO technical training subjects are most in demand or needed that DWR can develop or sponsor.

2.1 Do the people in your city, county or district office who work directly to administer and enforce (M)WELO attend workshops or receive technical training to assist them in understanding the elements of the (M)WELO application, administration, and oversight process?

- No
- Yes (If yes, please identify who sponsored and provided the training (for example StopWaste.org, California Landscape Contractors Association, PG&E or another entity).

2.2 If staff members do receive technical training, how many hours of training **per staff member** is obtained in a year?

- 1-2 hours
- 3-6 hours
- 7-10 hours
- More than 10 hours

2.3 If training workshops were sponsored or made available by California Department of Water Resources, which subjects would be most useful to you and your agency staff in administering MWELo to your community? (Please select all that apply)

- Understanding soils and natural drainage
 - Understanding plant varieties and their water needs
 - How to estimate and work with water budgets
 - Understanding different irrigation systems in relation to sustainable landscapes
 - Understanding alternative uses for non-potable water
 - Understand and market the purpose of (M)WELo and how sustainable landscaping contributes to improved public health, an increase in community pride and an overall higher quality of life for community residents.
 - Other topics which you believe formal training would be useful (please list)
-

Section 3: Technical resources utilized for (M)WELo administration and enforcement: Responses to these questions will help identify and assess for DWR the investments made by statewide agencies toward information technology used to administer and enforce (M)WELo.

3.1 Does your city, county or district have any dedicated computer software for documenting the administration and enforcement of your (M)WELo?

- Yes
 - No
-

3.2 If you answered yes on the previous question, please identify the computer software used by your agency to administer and enforce (M)WELO.

3.3 How many people in your office are trained in using the dedicated computer software?

- 1-2 office members are trained on this software
 - 3-4 office members are trained on this software
 - 5-6 office members are trained on this software
 - 6-7 office members are trained on this software
 - More than 7 office members are trained on this software
-

3.4 Does the software used to administer and enforce (M)WELO synchronize with other software used by your city, county or district planning or building department to track development projects in your community?

- Yes
- No

Section 4: Follow Up Information. Responses to questions in this section will be used to link the volume of (M)WELO applications processed and the geographic location of the agencies to other responses in this survey. This will allow for comparison of (M)WELO challenges and constraints faced across agencies that serve jurisdictions of various size and geographic location around California

4.1 For what California jurisdiction (city, county, or district) does your agency administer and enforce (M)WELO?

4.2 How many (M)WELO projects did your agency process in 2019?

4.3 Thank you for taking the time to complete this survey. Your contribution to this project is crucial to our goal of advising DWR how best they can help agencies statewide in their efforts to comply with the (M)WELO mandate. In addition to the survey responses, our research team will be conducting a series of one-hour online or telephone interviews. Interview responses will be confidential and, like survey responses, will be analyzed and presented in aggregate to DWR.

Would you or a representative in your office, who is knowledgeable about (M)WELO, be willing to participate in a 1-hour CONFIDENTIAL online or telephone interview?

Yes

No

Thank you for taking the time to answer this survey. We would be interested in any additional comments or feedback you wish to share regarding (M)WELO, this study and/or the content, structure and/or flow of this survey.

Appendix B: MWELO Survey Tabular Data

Total Agency Population Surveyed = 526

Total completed survey responses =174

Response rate – 33%

Table B1. How many people in agency work directly in the administration and enforcement of (M)WELO?

Response Options	Frequency	Share of Total Responses
0	27	16%
1-2	86	49%
3-4	36	21%
5-6	11	6%
More than 6	14	8%
Total Responses	174	100%

Table B2. Does your agency EMPLOY any of the following licensed or certified professionals to review, process and provide oversight to (M)WELO projects?

Response Options	Frequency	Share of Total Responses
No Specialist	141	81%
Landscape Architect / Designer	22	13%
Irrigation Specialist	7	4%
Other Title	4	2%
Total	174	100%

*Other Titles include Landscape Technician, Senior Engineer and Arborist

Table B3. Does your city, county or district CONTRACT any of the following licensed or certified professionals to review, process and provide oversight to (M)WELO projects?

Response Options	Frequency	Share of Total Responses
No outside contracts	126	73%
Landscape Architect / Designer	37	21%
Irrigation Specialist	7	4%
Horticulturalist	2	1%
Other titles	2	1%
Total	174	100.0%

*Other titles include Landscape contractor, Code reviewer, Engineer, Landscape plan reviewer

Table B4. Do the people in your city, county or district office who work directly to administer and enforce (M)WELo attend workshops or receive technical training to assist them in understanding the elements of the (M)WELo application, administration, and oversight process?

Response Options	Frequency	Share of Total Responses
Staff receives training	92	53%
No Training	82	47%
Total	174	100%

Table B5. If yes, please identify who sponsored and provided the training (for example StopWaste.org, California Landscape Contractors Association, PG&E or another entity)

Response Options	Frequency	Share of Total Responses
PG&E	31	28%
StopWaste.org	25	22%
DWR	22	20%
California Landscape Contractors (CLCA)	13	11%
Other (17 other sources)	21	19%
Total Responses	112	100%

Table B6. How many hours of training per staff member is obtained in a year?

Response Options	Frequency	Share of Total Responses
No Training	77	44%
1-2 hours	46	26%
3-6 hours	35	20%
7-10 hours	13	7%
More than 10 hours	3	3%
Total Responses	174	100%

Table B7. If training workshops were sponsored or made available by California Department of Water Resources, which subjects would be most useful to you and your agency staff in administering MWELO to your community? (Please select all that apply)

Response Options	Frequency	Share of Total Responses
Understand and market the purpose of (M)WELO and how sustainable landscaping contributes to improved public health, an increase in community pride and an overall higher quality of life for community residents.	63	25.3%
How to estimate and work with water budgets	49	19.7%
Understanding different irrigation systems in relation to sustainable landscapes	40	16.1%
Understanding plant varieties and their water needs	36	14.5%
Understanding soils and natural drainage	26	10.4%
Understanding alternative uses for non-potable water	22	8.8%
Other Topics (please list)	13	5.2%
Total Responses	249	100.0%

Summary of other topics listed:

- How to administer and implement MWELO
- How to coordinate with local water districts
- How to read a landscape plan
- Certification classes for irrigation auditors
- How to streamline largescale building projects and housing developments
- How to deal with inexperienced homeowners efficiently
- Understanding the role of local agency employees in implementing MWELO

Table B7. Does your city, county or district have any dedicated computer software for documenting the administration and enforcement of your (M)WELO?

Response Options	Frequency	Share of Total Responses
Yes	26	15%
No	148	85%
Total	174	100%

**Appendix C: Initial E-mail to Interview Participants and
Sample Format Followed for One-on-one Interviews**

Dear Name of Respondent,

Recently, you completed our survey asking about resources available to the City of XXX for the purpose of administering the Model Water Efficient Landscape Ordinance (MWELo) to the citizens of XXX. First, we would like to thank you for taking the time to complete our survey. Your feedback is an important contribution to our research, which aspires to provide the California Department of Water Resources (DWR) fact-supported recommendations for how the State of California can aid to improve the MWELo process.

In the survey you responded that you would be willing to participate in a brief online interview. The purpose of this interview is for us to acquire a deeper understanding of how MWELo compliance is enforced by the City of XXX.

The attached MS Word document provides a summary of your specific survey responses as well as an outline of what the interview will include. As indicated in the outline, we want to know each of the steps in the MWELo process from the moment a new project is presented to the City of XXX all the way to project completion. In your description of the process, we will ask that you identify challenges your office faces in completing the specific steps and offer your professional opinion of which challenges may improve with assistance from DWR. As with the survey, the goal of our interview with you and other community officials around California, is to provide recommendations to DWR for how to assist in mitigating challenges and improve the overall MWELo process statewide.

We would like to schedule our interview with you sometime during the next couple of weeks.

Thank you again for your time and willingness to participate in our study. Your contributions are greatly appreciated.

Sincerely,

William Matthews, Ph.D. UC Davis
David Fujino, Ph.D. UC Davis

MWELO Online Interview Questions and Format

Questions about MWELO Application Process

1. Please describe the steps required for processing an MWELO application/permit from initial submission of application for a permit to project completion.
 - a. What is the chronological order?
 - b. What department is responsible for each step? (if multiple departments or units are involved in the MWELO process)
2. From the steps that are described:
 - a. What are the greatest challenges for processing the MWELO application?
 - b. At what step or steps do these challenges occur?
 - c. Are these challenges internal to your office (For example, determining which department is best suited for completing specific tasks) or external (For example, access to more specific training)?
 - d. What recommendations do you have for solving these challenges?
 - i. Internally
 - ii. Externally: How do you think DWR can help?
3. In your experience with MWELO, what are the 1 to 3 highest priority challenges where DWR can assist the MWELO application process?

Questions about Section 495 Submittal Process

4. What are the biggest challenges for submitting Section 495 annual reporting form to DWR?
 - a. Internally
 - b. Externally: How could DWR improve or streamline the process for you and your agency?
5. How would you rank your biggest challenges (#1 would be the highest priority) that DWR could aid you and your agency?

Appendix D: Direct Statements from Interview Participants

C.1 Statements Relative to MWELO Leadership

Respondent A: When MWELO went into effect, the city had a community development director at the time who “dropped the ball” and MWELO or WELO did not get included or adopted into the municipal code. Respondent has been told by the city attorney that even though the ordinance is not part of the city’s code it still must follow state law. The city had not been enforcing or administering MWELO until they receive the letter from NRDC in 2019 regarding the potential litigation against the city if it continued to fail to comply with MWELO. It was after receiving this letter that the respondent was tasked with going back into ten years of records and “create” MWELO reports to meet compliance. Prior records consisted of handwritten notes that simply stated, landscape plans were submitted on a certain date and turned over to outside consultant for review. The consultant would give approval to project’s MWELO documents on a certain date and that was the extent of MWELO administration. There was little to no oversight from planning staff regarding MWELO. Any form of MWELO management was non-existent in the city up until a couple of years ago when the NRDC letter was received.

Respondent works in the planning department, which they state has minimal staffing and resources. Respondent states she is not an expert and has no idea of where to even begin with managing MWELO once project is approved and permits are granted. Respondent does not envision increased resources dedicated toward oversight of MWELO as city leaders themselves are unaware of MWELO requirements.

Respondent H: Respondent was given the task of overseeing MWELO due solely on the fact that they, as the city arborist, is the individual on staff who deals with plants (parks and city trees). NO aspect of MWELO compliance and administration is officially part of respondent’s job description. Respondent is only one in city office who can come close to having the background to fulfill necessary MWELO tasks. “If it has a leaf it goes to Respondent”! The rest of the city staff and managers, for the most part, turn a blind eye to MWELO and compliance requirements.

Respondent G: Respondent’s city is a mature built-out community with little to no new construction per year. MWELO ordinance is part of the entitlement process, which mostly entails renovation of existing properties. Respondent is the main source of MWELO information in his agency. Respondent is not trained in landscape, irrigation, or horticulture. They only became the “MWELO expert” because they worked alongside a landscape architect in a previous planner position in another community who taught respondent how to read landscape plans. There are a couple of planners on staff who have absolutely no idea what they are looking at when reviewing a landscaping plan. Respondent has tried to train them as best he can.

Respondent I: The city that respondent I works for is a small to medium sized community of about 75,000 and has a very limited number of full-time staff. The city relies on contract staffing with idea that when things get busy, they can bring in more people and when things slow down, they let them go. Respondent is the main contact in the planning office for MWELO. Respondent, nor any of their colleagues are trained as landscape professionals.

Respondent F: The community agency adopted their WELO in September 2017, a couple of months prior to respondent starting their current position. The past year (2020) is the first year that the community agency really started implementing their WELO and including WELO requirements on development projects. The agency had not reported any square footage of MWELO landscaping to DWR prior to 2020. In respondent's opinion, the politics in the county were such that MWELO was viewed as a case of over-reach on the part of the state. Therefore, administration of MWELO received very little if any attention and was not included as part of the planning process up until 2020. The general feeling respondent gets is the agency will comply with MWELO if forced too but it is far from a community-wide priority. Respondent is the sole person responsible for tasks associated with MWELO. Respondent's boss, the planning director, is very supportive of MWELO and sees its need and importance but above the planning director there is not a lot of support for MWELO. Most of respondent's goal is to keep county in compliance as best as they can and as their workload allows.

Respondent 2F: Respondent's community is small but is situated within a larger urban part of California. Community leaders are not supportive of MWELO but understand the city must comply. There is no landscape, horticultural or irrigation specialist on staff at the agency and respondent is the main contact relative to MWELO management.

Respondent C: Respondent has been employed as a planner in city for about 9 years now. The MWELO process currently in place has been functioning since before she was hired, and it runs very smoothly. City is mature and mostly built out. Most projects that come into planning office are remodels or rebuilds of existing properties. The office is very busy for the whole year.

Respondent E: The system to manage MWELO by agency has been in place since 2010. Developers in the area have worked with MWELO policy for a long time and view the process as simply a cost of doing business in the community. Municipality of respondent charges full-cost recovery on all project planning entitlements. This allows them to hire landscape professionals as consultants in areas where staff experience and expertise is lacking. Municipal agency has a pre-vetted list of landscape professionals in the area that are essentially on retainer to the city for MWELO and act on the city's behalf. The city updates the list of consulting landscape professionals about every 5 years. They will release a call for proposals and select landscape professionals for the list based on proposals.

Respondent B: The city updated their existing municipal code a few years ago to include requirements consistent with the State's MWELO. They wanted to draft the WELO language into the community ordinance in a way that complimented and utilized processes already in place and make the transition more uniform. Since updated to the municipal code, MWELO has been a part of the review process for every project that comes into the planning office. Developers in the area are familiar with the requirements and there are very few issues regarding MWELO compliance.

Respondent 2E: Respondent's community adopted the state's MWELO with a few modifications to make it more applicable to the community. Respondent works in a mature city and does not receive many applications for projects that require MWELO compliance. The agency receives negative pushback from the local development/building industry due to the time

it takes to get an MWELO application approved. When a project triggers the need for MWELO it can take an average of 3 months to receive approval.

Respondent 2A: Respondent has worked with city planning office for 15 years and is the main contact person in the office who administers MWELO and provides guidance to other colleagues. Respondent became MWELO “expert” when they were assigned to draft the original MWELO ordinance for the city in 2012. Respondent has no formal background or education in landscaping or horticulture. It is challenging to get planning staff colleagues up to speed on MWELO or to focus on MWELO and its requirements. MWELO is just one of many ordinances related to planning, development and building that must be complied with and it gets pushed to the side many times.

Respondent 2D: This respondent manages MWELO compliance at the county level. MWELO has been a part of the county zoning ordinance since its earliest inception in 1993. The county follows the state’s version of MWELO without any modifications. Respondent is the only individual in the county office who administers MWELO. They are a licensed landscape architect, and it is built into the code that whoever fills the position respondent currently holds must be a licensed landscape architect.

Respondent 2C: In respondent’s community MWELO compliance was originally the responsibility of the community planning department. Respondent and his colleague thought it was better suited for the city’s Water Efficiency Department and actively campaigned for WED to assume MWELO duties. When they assumed their current position, they were motivated by the goal to improve water efficiency and assure MWELO would be complied with in the community. Luckily, respondent commented, they are “blessed” to have a City Council that is pro-MWELO and has supported their leadership by allowing the hiring of multiple staff in the Water Efficiency Department to assist in administration of MWELO.

C.2 Statements Relative to MWELO Management and Communication

Respondent A: The city has no formal system in place for MWELO or information that educates developers or citizens of the requirements relative to MWELO. The city is forecast to grow substantially soon. Respondent stated that over 100 building permits for new projects are expected to be granted over the next year or two, so MWELO will become much more important. Even with the increase in growth that is expected, respondent did not think that more staff would be hired to handle the increased workload as the city budgets do not allow for it. For initial application review during the pre-construction phase, the city contracts with an outside landscaping consultant, with knowledge of MWELO, that works on behalf of the city but is paid by the developers. The same landscape architect firm is used on all projects. There are no onsite inspections conducted during construction phase nor a post-construction audit of landscaping at end of project.

Respondent H: For new projects, developers submit an entitlement application to the planning department. Once entitlement is approved a series of conditions must be met by the developer to attain a building permit. One of the conditions includes completion of a landscape package

containing documentation showing how project landscaping will comply with MWELo. This usually requires some “coaching” on the part of respondent to the developers to assist with MWELo documents. Respondent is only person on staff who reviews applications for MWELo compliance. The rest of the city staff and managers, for the most part, turn a blind eye to MWELo and compliance requirements. Once building package is approved, city staff do not conduct site visits during construction. Once project is completed an inspection for final approval of occupancy permit is conducted. The city requires the developer/builder to hire an outside expert to conduct the landscaping audits to verify that all aspects of the landscaping that was outlined in the MWELo approved plan meets specifications. One challenge of this system is that there is no standard format for auditors to submit findings and verifications. Interpretation of what should be included in the audit reports is all over the map.

Respondent G: Agency does not conduct site visits during construction nor end-of-project water audits. Respondent stated that staff does not have the expertise to properly conduct inspections or audits. Respondent feels this is an area where Cal-Water could step in and provide some expertise and conduct the audits.

Respondent I: New applications for entitlement are submitted to the community planning office. These submissions are then relayed to the Public Works Department. In respondent’s community the Public Works Department is responsible for all grading and any water use aspects of a development project including MWELo. Specific to landscaping and MWELo, the public works department contracts with a local engineering firm to review plans on the City’s behalf and provide comments regarding irrigation and planting specifications. Project and comments from consulting engineering firm will then be reviewed internally and jointly by the Public Works agent and the Planning Department agent. The final decision of approval is made by Public Works agent based on consultant’s comments. The city engineers conduct site inspections during construction, but these inspections are focused on the grading of the lot not the landscaping. A challenge with inspecting for MWELo during construction is that planting is usually done very late in the process, after the city civil engineer has completed their role and the planning department considers the project completed. The city’s planning department contends that public works staff should be responsible for insuring that MWELo compliance is met. Public works is reluctant to take on this role as inspectors feel that they are not experts and are not trained or educated to be “landscape inspectors”. Considering the lack of expertise on staff the municipality made the decision to put the burden on the developer to self-certify that all the elements of landscaping that were approved in the application review are completed and in compliance. Once the project is completed the developer must submit a letter to the municipality that certifies the landscape and irrigation system was installed as approved and, therefore, is MWELo compliant. Respondent believes the self-certification / lack of trained inspectors’ issue for project completion is the city’s weakest part of MWELo compliance.

Respondent F: Respondent’s area is about to experience a building boom. Approval had been granted for 25,000 new housing structures to be constructed over the next 10-15 years in the area. Respondent is not sure how enforcement of WELo will be conducted with such a large volume of projects to manage at one time. Respondent is looking to develop a simple site check list like one used by other communities. Respondent does not see WELo going away so is trying to develop a streamline check system that each of their colleagues in the planning office

can use on their managed projects. Respondent has a degree in landscape architecture and is the sole person in the planning office responsible for tasks associated with MWELo. Most of respondent's goal is to keep county in compliance as best as they can and as their workload allows. Agency requires developers to hire a licensed landscape architect to complete and verify all MWELo documents submitted for application. Projects are assigned to staff planners in the office. Selected planner will follow a project from start to finish. Respondent is only member of planning staff to have formal training in landscape profession and double-checks all projects for MWELo compliance. Most document checks simply verify that project landscapes are meeting primary water budget numbers. "I Just making sure they are using less water than allowed." Respondent stated that agency staff had not been conducting site visits, but they plan to start conducting construction phase inspections once COVID passes. When a project nears completion a county-employed construction manager will send out a "punch-list" of items to be checked and signed off prior to issuing an occupancy permit. The "punch-list" includes an MWELo final inspection and water audit.

Respondent C: City planners take the lead on efforts to administer and monitor landscaping of projects to meet MWELo criteria. Planners will check landscape palate to make sure it meets conditions of use for the site. They do not have a landscape architect on staff. Respondent is pursuing a landscape architecture certificate at time of interview. This is a decision they made themselves. The planners are responsible for assuring MWELo compliance throughout the process. The agency has a dozen planners on staff, and all are knowledgeable about MWELo. Respondent is confident in colleagues' ability to assess plans and application materials without professional guidance. Onsite inspections relative to MWELo are only done when project is completed. There are no site visits during the construction phase. Final inspections of structures also include inspection of landscaping for MWELo compliance. An occupancy permit is not issued until landscaping passes inspection (along with other elements of project). They do not include or require a water audit as part of final approval. Respondent was not sure how they would accomplish this task. Many of the residents who come into the planning office are unaware of MWELo or the requirements involved. Their planning staff spend a great deal of time having to educate the public, which is fine as the respondent and her colleagues value the purpose behind MWELo a great deal

Respondent E: Respondent's agency will send a project's landscape documents to one of the five landscape architects contracted by the agency for preliminary review. This preliminary review acts as a "heads-up" on items that might not meet certain thresholds, and which may cause issues during the formal plan review. During the entitlement phase there is typically only one review by the landscape architect. Once the conceptual plan is approved and compliance to policy assured, builders/developers are then free to submit permit-level drawings for approval of building permit and other permissions needed to start project. The planner responsible for the project will coordinate with contracted landscape architect who will subject permit-level drawings to technical review. These drawings are submitted by the developer and would have been done by the developer's landscape architect but reviewed by the city's contracted landscape architect. Monitoring for WELo during construction phase is where oversight can breakdown. Respondent tries to remind/encourage developers to include the city's contracted experts on all pre-project meetings and communicate with landscape architects throughout project. Even so, respondent has attended end-of-project site inspections where the landscape architect had never

once visited during construction. One of the problems lies in the limited requirements, with regards to landscape, to get a completed project signed off. For other items, such as electricity, there are a list of items specific for electrical installations that need to be checked off prior to designating electrical work as a completed installation. For landscaping and MWELO there are no specific, individual checks. It is either considered completed or not. Respondent is not completely confident that a final MWELO water audit is conducted on every project. A final MWELO audit is not a requirement for final approval of occupancy permit. In respondent's opinion this is another area where MWELO compliance breaks down.

Respondent B: Pre-construction plan reviews for MWELO are a requirement of all entitlement and building permit applications. All reviews are done internally by planning staff members. Ideally, each planner will be responsible for a project from start to finish. Respondent believes that the complexity of MWELO, with the required understanding of WUCOLS and the calculations required of the review process is intimidating for the typical planner as most do not have background experience in landscaping or irrigation technology and have no knowledge of how to apply concepts put forth in current MWELO guides. During construction phase municipal engineer and building inspectors will periodically check for progress on landscaping plan and relay back to planning office that certain tasks related have been completed. No spot checks are conducting by planning during construction. A final water audit is required during final inspection of project and prior to issuance of occupancy permit.

Respondent 2F: Respondent's community is small but is situated within a larger urban part of California. There is no landscape, horticultural or irrigation specialist on staff at the agency and respondent is the main contact relative to MWELO management. Most development in the community tends to be very high-density housing situated on very small "postage-stamp" size lots. Respondent stated that local developers/builders have become creative due to MWELO by including landscaping designs with planting areas just under the limit to trigger need for MWELO oversight. Developers will also focus on landscaping the front yards of houses and leave the backyard for the homeowners to manage. Respondent stated that their agency does not do cite inspections during construction nor do they perform a final system audit at the end of a project. They simply do not have enough staff or enough expertise on staff to perform these tasks.

Respondent 2E: Respondent is the contact person in agency for MWELO and has attended some MWELO training sessions in the past. Agency requires builder/developer clients to hire a licensed professional to conduct the final inspection and certification of landscaping/irrigation for project. Use of third-party experts is not a requirement for preparing MWELO application documents. Nobody in the agency has technical expertise related to horticulture, landscaping, or irrigation. Agency relies only on third party expert to certify that landscaping and irrigation are compliant with MWELO. Community does not require third-party professional to complete application materials when MWELO is required. MWELO application materials are checked by respondent. If documents meet MWELO requirements application is approved, otherwise application will require corrections and revisions until compliance is met. After application approval, respondent's agency is not involved until applicant is ready for final check-off and certification of project for occupancy permit. Agency will inspect at this time to make sure plantings are consistent with what was approved. They DO NOT audit the irrigation system as

they simply do not have the expertise or knowledge on staff to perform such a task. They rely upon the applicant to submit a certificate of compliance that is filled out by a third party who is hired by the developer/builder. Third party is required to be a licensed landscape professional and is only involved at the end of the project for final certification. Respondent would recommend to communities just enacting their MWELo to make sure all staff are aware of the requirements in the ordinance. Educate and communicate about MWELo to make the process streamline. They also advise other agencies to figure out a tracking system for projects, so end-of-year 495 reporting is more efficient.

Respondent 2A: For projects that trigger MWELo oversight, developers are required to contract with a licensed landscape architect to prepare initial application material to meet MWELo compliance. The city does not directly check the credentials of hired professional. Applications are checked to make sure numbers comply and documentation is complete. Lack of technical expertise in office and time limits the extent of application review. Respondent stated it is challenging to get planning staff colleagues up to speed on MWELo or to focus on MWELo and its requirements. MWELo is just one of many ordinances related to planning, development and building that must be complied with and it gets pushed to the side many times. In respondent's view MWELo is technically complex, which makes it less appealing for planners and community development people to contend with. This lack of interest does create an internal conflict between planning department and other community agencies as to who is responsible for oversight of MWELo compliance during construction or for post-construction final audit. As such, no cite inspections for MWELo take place during the construction phase of a project. They have no one on staff qualified to do cite inspections for landscaping or to check that elements in the MWELo documents are being put in place. There is a requirement for a water audit at project completion. Water audit is done by a third party hired by the developer.

Respondent 2D: Respondent is the only individual in the county office who administers MWELo. They are a licensed landscape architect, and it is built into the code that whoever fills the position respondent currently holds must be a licensed landscape architect. MWELo documentation submitted to the county must be completed or verified by a licensed landscape professional contracted by the developer/builder. Agency clients must also use a verified licensed professional to conduct end-of-project audits for MWELo compliance. The most challenging aspect of MWELo compliance for respondent is that there are 17 different water districts located in the county. It frustrates respondent that there is no way to monitor the water use for irrigation or planting after project is completed. Water use data is collected by the water districts, and they will not share information with county planning office as meter data is considered proprietary. Respondent is frustrated as they have no way of knowing if their efforts in enforcing MWELo is making a difference in water use or not. Lack of coordination between water districts and planning office makes MWELo challenging to monitor and enforce. There are no site visits during construction as there is simply no time or resources. Developers/builders must submit a certificate of completion at the end of a project. They are required to use a third-party licensed landscape architect to conduct the final system audit and certify completion of project. Respondent must trust findings of contracted expert as there is no time to verify results.

Respondent 2B: Respondent agency does not directly oversee application procedures.

Respondent 2C: Respondent their department has a clear mandate from community officials with respect to oversight and management of MWELO. Respondent agency clearly communicates their authority with respect to MWELO to other community development agencies, such as the planning department, building department, public utilities department and area water providers is imperative to success. Respondent commented that the lack of communication between water districts, county water departments and community development offices can be a challenge. Having everyone on the same page and up-to-speed on projects is important for effective MWELO oversight. “Meeting and knowing all the other inspectors who are responsible for code compliance in other areas is important. Having them in the know and understanding that MWELO compliance is a requirement for final approval of the project is a must.”

Respondent’s agency made a concerted effort to create their own documentation templates to monitor, audit and enforce MWELO compliance measures. Respondent learned from experience as a contractor, and early on with MWELO management, that if documents provided to clients at the start of a project do not clearly state expectations and thresholds for compliance the result is usually a canned audit based on manufacture’s recommendations and “nobody will actually test the system to ensure compliance.” Having their own forms forces clients, and their representative landscape experts, to provide information on each item listed. Furthermore, items listed on forms are based on water meter readings and are easily verifiable. Agency clients are required to have a licensed landscape professional work on MWELO documents. Local architects and developers are familiar with the community’s MWELO process. Most problems are with architects that are new to the area or from out-of-state and have no experience with MWELO. Respondent commented many large building sites have regular turnover with respect to on-site superintendents. These changes are challenging as the larger development companies have sites all over the state of California with different communities treating MWELO with different requirements and standards. This non-standard enforcement of MWELO is difficult and confusing for on-site superintendents. This scenario many times leads to frustration and push-back for respondent’s agency. They try to overcome the frustration and confusion by supplying as much information as possible to the developer and on-site superintendents. Their goal towards their development clients is to ensure there are no surprises and it is clear what the requirements and timing of certain MWELO processes are. During construction phase agency staff will hold continual meetings with project superintendents and their on-staff inspectors throughout the building and development process. Respondent feels this is vital, so everyone is on same page and no surprises occur. In addition, agency will meet with other community development departments throughout the project’s evolution. Respondent believes these meetings are also crucial to MWELO compliance.

C.3 Statements Relative to MWELO Technical Expertise Available

Respondent A: Respondent is not an expert and has no idea of where to even begin with managing MWELO once project is approved and permits are granted. Respondent does not envision increased resources dedicated toward oversight of MWELO as city leaders themselves are unaware of MWELO requirements. For initial application review during the pre-construction phase, the city contracts with an outside landscaping consultant, with knowledge of MWELO, that works on behalf of the city but is paid by the developers. The same landscape architect firm is used on all projects.

Respondent I: Respondent is the main contact in the planning office for MWELO. Respondent, nor any of their colleagues are trained as landscape professionals. Community contracts with a local engineering firm to review plans on the City's behalf and provide comments regarding irrigation and planting specifications. The engineering firm does not provide services beyond initial MWELO review.

Respondent G: Respondent is the main person in the planning office in charge of MWELO. Respondent is NOT trained at all in landscape, irrigation, or horticulture. The only reason respondent is in charge is because they worked closely with a trained landscape architect in a previous planner position who provided some informal training on how to read landscaping plans. The city does not subcontract any aspects of MWELO.

Respondent B: Respondent is the only one in the planning office that has any training with regards to landscaping. They received some specialized landscape architect training at a previous job. Respondent was the main author to draft the city's WELO application protocol. They are the go-to source of information and guidance on issues pertaining to WELO and landscaping in general. Respondent stated that a landscape background is not a typical specialty amongst planners.

Respondent H: Respondent was given the task of overseeing MWELO due solely on the fact that they, as the city arborist, is the individual on staff who deals with plants (parks and city trees). NO aspect of MWELO compliance and administration is officially part of respondent's job description. Respondent is only one in city office who can come close to having the background to fulfill necessary MWELO tasks. "If it has a leaf it goes to Respondent"! Respondent is only person on staff who reviews applications for MWELO compliance. The city requires the developer/builder to hire an outside expert to conduct the landscaping audits to verify that all aspects of the landscaping that was outlined in the MWELO approved plan meets specifications.

Respondent C: Agency does not have a landscape professional on staff. Respondent is pursuing a landscape architecture certificate at time of interview. This is a decision they made themselves. The planners are responsible for assuring MWELO compliance throughout the process. The agency has a dozen planners on staff, and all are knowledgeable about MWELO.

Respondent 2F: There is no landscape, horticultural or irrigation specialist on staff at the agency and respondent is the main contact relative to MWELO management. Respondent stated that their agency does not do cite inspections during construction nor do they perform a final system audit at the end of a project. They simply do not have enough staff or enough expertise on staff to perform these tasks.

Respondent 2E: There are no trained or licensed horticultural professionals on staff. Respondent is the contact person in agency for MWELO and has attended some MWELO training sessions in the past. Agency requires builder/developer clients to hire a licensed professional to conduct the final inspection and certification of landscaping/irrigation for project. Use of third-party experts is not a requirement for preparing MWELO application documents.

Nobody in the agency has technical expertise related to horticulture, landscaping, or irrigation. Agency relies only on third party expert to certify that landscaping and irrigation are compliant with MWELO.

Respondent 2A: Respondent became MWELO “expert” when they were assigned to draft the original MWELO ordinance for the city in 2012. Respondent has no formal background or education in landscaping or horticulture. It is challenging to get planning staff colleagues up to speed on MWELO or to focus on MWELO and its requirements. Respondent would recommend to communities beginning to organize their MWELO to take advantage of outside landscape professionals in the community to do the paperwork and inspections. Utilize local professionals to assure compliance. Developers are required to contract with a licensed landscape architect to prepare initial application material to meet MWELO compliance. The city does not directly check the credentials of hired professional. Lack of technical expertise in office and time limits the extent of application review. Water audit is done by a third party hired by the developer. Again, the community has nobody with experience or expertise to conduct audit and does not contract with outside experts to conduct audit on city’s behalf.

Respondent E: Municipality of respondent charges full-cost recovery to applicants on all project planning entitlements. This allows them to hire professional consultants in areas where staff experience and expertise is lacking. The city has a list of on-call landscape architect consultants that are considered an extension of city staff. The city updates the list about every 5 years. They will release a call for proposals and select landscape architects for the list based on proposals.

Respondent F: Respondent has a degree in landscape architecture and is the sole person in the planning office responsible for tasks associated with MWELO. Most of respondent’s goal is to keep county in compliance as best as they can and as their workload allows. Agency requires developers to hire a licensed landscape architect to complete and verify all MWELO documents submitted for application. Projects are assigned to staff planners in the office. Selected planner will follow a project from start to finish. Respondent is only member of planning staff to have formal training in landscape profession and double-checks all projects for MWELO compliance.

Respondent D: Respondent is a private contractor with a degree in landscape design who works for the two communities located in Southern California. She is employed by a professional staffing agency who contracts her efforts with both communities. The focus of her duties is to administer and manage MWELO for both communities. Respondent pushes both communities to require a licensed landscape architect to develop plan and fill necessary documents for each new project. All the landscape architects in respondent’s area are well informed and are knowledgeable on the MWELO ordinance and what is required for compliance. Respondent stated “MWELO is really complicated, requiring the use of experts by the developer makes the MWELO process run smoother for everyone.” Respondent acts on behalf of both communities and is responsible for all MWELO application reviews and final project approvals for both communities. Respondent requires developer to hire an independent, certified professional (Certified landscape irrigation auditors who are certified through the Irrigation Association) to conduct final water audit at completion of project. They will recommend one or two inspectors that respondent works with and trusts, who are also less expensive. End-of-project water audits in respondent’s area can run from \$600 to \$3,000.

Respondent 2D: Respondent is the only individual in the county office who administers MWELO. They are a licensed landscape architect, and it is built into the code that whoever fills the position respondent currently holds must be a licensed landscape architect. MWELO documentation submitted to the county must be completed or verified by a licensed landscape professional contracted by the developer/builder. Agency clients must also use a verified licensed professional to conduct end-of-project audits for MWELO compliance.

Respondent 2C: Respondent agency has hired multiple trained staff to assist in administration of MWELO. Agency clients are required to have a licensed landscape professional work on MWELO documents. Local architects and developers are very well informed by the agency, and therefore familiar with the community's MWELO process.

Appendix E: Agency Profile with a Well-Functioning MWELO Program

Of the agencies interviewed for this study, the most effective MWELO program resides with Respondent 2C. The community within which the respondent agency resides has strong public leadership with a positive stance toward water conservation. Elected officials, anticipating a period of active, rapid growth with multiple new housing developments being planned, recognize the need for water-efficient landscaping and support the goals of MWELO.

This support carries over to the community's MWELO oversight agency, which has resources to employ multiple horticultural/landscape and irrigation systems specialists for MWELO. Furthermore, the display of public leadership and support is complimented by an effective agency leader who themselves is a strong advocate of the goals of MWELO. The alliance of community leaders and agency staff toward the goals of MWELO provide a solid foundation to develop an effective MWELO system.

Agency leadership promotes thorough communication with all other agencies involved in community development about MWELO and the need to include MWELO into any development plan. It is customary for the agency to hold multiple meetings regarding MWELO compliance related to development projects around the community with other development agencies and area water providers. It is the belief of agency leadership that keeping all parties involved in a development project informed and "in-the-loop" about MWELO compliance makes the system run smoother.

Effective communication is also expected with agency clients, which are the builders and property developers. As such, the agency leaders have gone to extensive effort to develop their own MWELO checklists and informational materials to provide agency clients. Development of these forms was done with the mandate that compliance criteria was clear and easy to understand. The goal of the agency leader is for no surprises to occur with agency clients or other development agencies with respect to MWELO.

As stated previously, agency staff consists of multiple professionally trained and certified landscape professionals and irrigation systems technicians. The technical complexity of MWELO is not a constraint for the agency.

To summarize, a “high performing” agency administrating MWELO has the following attributes:

1. Leadership prioritizes and champions water conservation and water use efficiency.
2. Leadership provides the time, tools (training), and resources (internal and external) to effectively accomplish the MWELO process.
3. Staff has clearly defined roles and responsibilities for MWELO administration.
4. Agency has trained, educated and tenured staff administering MWELO with little to no turnover.
5. Agency has a defined process for managing the MWELO process within and between departments.
6. Staff clearly understands “who is talking to whom, about what, to ensure MWELO application completion”.
7. Agency has a communication process/system in place to ensure effective communication internally and externally.
8. Agency has a trained, experienced designated project manager for facilitating the MWELO application internally and externally.
9. Agency has a defined process for conducting post-MWELO application process feedback for future improvements to the process.