Memorandum for: Mr. Kevin Reidy, Colorado Water Conservation Board

From: Babbitt Center for Land and Water Policy

Subject: Water Plan Grant Conservation & Land Use for Covered Entities/CWCB PO#POGG1 PDAA 20900002107

Date: June 4, 2019

Period of this report: August 3, 2018 – June 1, 2019

General: The Babbitt Center and Getches-Wilkinson Center for Natural Resources Energy, and the Environment team received the initial Colorado Water Plan grant Notice to Proceed and Purchase Order on August 3, 2018 in the amount of $35,000. During the period of this report, the team completed all the tasks of the water grant plan.

Task 1 – Research and literature review and interviews of selected water providers

Task 2 – Assemble Advisory Committee and obtain feedback

Task 3 – Draft proposed addenda to existing Water Efficiency Plan Guidance and Sample Plan

Task 4 – Conduct workshops to obtain feedback on draft addenda

Task 5 – Redraft Addenda based on feedback and submit to CWCB for consideration

Task 6 – Hard costs throughout

Summary of Work Performed:

Task 1 work included:

- Literature review of 31 sources (Lit Review List as of 6-12-18.pdf)
- Interviews of 10 water providers (Interview Schedule of Water Providers.pdf; Interview Analysis 7-11-18.pdf)
- Interviews with other topic area experts: Ellen Roberts, former State Senator; Holly Piza, Urban Drainage and Flood Control District; and Andre Dozier, Colorado State University (Discussion with Ellen Roberts re SB 15-008.pdf; WEP discussion with Holly Piza.pdf; Discussion with Andre Dozier re IUWM.pdf)
- Create list of best practices to inform the creation of a Guidance Addendum (WEP checklist 5-30-18.pdf)

Task 2 work included:

- Identify and confirm advisory committee members
- List of advisory committee members (Advisory Committee, Interviewees, etc.pdf)
- June 12, 2018 meeting and agenda (Advisory Committee Mtg 6,12,18 Writeup.pdf)

Task 3 work included:

- Solicit input from the Advisory Committee
- Prepare draft for review during workshop
- Draft Addendum for review during workshop (Draft WEP Guidance Addendum for Land Use Best Practices.pdf)

Task 4 work included:

- Workshop held October 24, 2018 at Summit County Commons in Frisco, Colorado
- Invitation (Water Efficiency Workshop Invitation 10.24.2018.pdf)
- 32 attendees (Water_Efficiency_Guidance_Workshop_Registration_FINAL_10.24.2018.pdf)
- Agenda (Agenda-Oct. 24, 2018 Workshop on Draft Guidance for WEPs.pdf)
- Workshop feedback (MCurgus Summary and Recs from Workshop FINAL.pdf)

Task 5 work included:

- Final addenda accepted by CWCB January 2019 (WaterEfficGuidanceDoc_LandUsePlanningAddendum.pdf)
- Final Sample Plan (FINAL SAMPLE PLAN.pdf)
- Final revised worksheets (GuidanceDocFinalWorksheets_Amended_4.23.19.xlsx)

Task 6:

Hard costs covered in-office printer use for Babbitt Center staff

Ongoing Tasks: The educational activities below have manifested since the addendum was adopted by CWCB. Note that these do not require further funding from this specific grant.

- Continuation of Tasks 1 and 2
- Presented status update to Pikes Peak Regional Water Authority/coordinated with Aurora Water

Lincoln Contribution: Lincoln Institute's contribution included direct funding of $30,000 for Task 1 and in-kind funding of $19,990 for the following staff time/benefits, office space, and utilities. Please advise if accounting of staff time is required.

- Jim Holway, program director
  - General oversight and review
- Erin Rugland, project manager
  - Project Management
  - Research, literature reviews, and interviews to inform Addendum creation
  - Workshop and advisory committee participation/attendance
  - Addenda writing
  - Addenda design
- Mia Stier, project coordinator
  - Contracts and payments
  - Addenda editing
  - Workshop planning

Prepared by: Mia Stier and Erin Rugland, Babbitt Center for Land and Water Policy, mstier@lincolninst.edu and erugland@lincolninst.edu, 602-393-4300

TASK 1

GUIDANCE ON IMPLEMENTING WATER CONSERVATION THROUGH LAND USE EFFORTS

Literature Review List
As of June 12, 2018

CWCB Municipal Water Efficiency Plan Guidance Document
Author(s): AMEC Environment & Infrastructure
Date: July 2012

Sample of a Municipal Water Efficiency Plan
Author(s): Aquacraft, Inc.
Date: August 2012

Guidebook of Best Practices for Municipal Water Conservation in Colorado
Author(s): Aquacraft, Inc., on behalf of Colorado Water Wise
Date: August 2010

Urban Landscape Water Use Research Evaluation
Author(s): Water Research Foundation, Arizona State University
Date: February 7, 2018

Coordinating Water Management and Urban Planning Efforts Webinar
Author(s): Water Research Foundation
Date: December 7, 2017

Colorado Water and Growth Dialog Research Report
Author(s): Clarion Associates, The Keystone Center
Date: March 2015

Verde Land and Water Planning Toolbox
Author(s): Friends of the Verde River
Date: 2017

Wet Growth: Chapter 1 on Integrating Water Controls and Land Use Controls: New Ideas and Old Obstacles
Author(s): Craig Anthony (Tony) Arnold
Date: 2005

Wet Growth: Chapter 2 on We Are All Water Lawyers Now: Water Law's Potential but Limited Impact on Urban Growth Management
Author(s): A. Dan Tarlock
Date: 2005

Wet Growth: Chapter 3 on Water Management and Land Use Planning: Is It Time for Closer Coordination?
Author(s): Barton H. Thompson Jr.

Date: 2005

Pace/LULA Module 1 – Breaking Down Silos: Integrating Water Efficiency into Land Use Planning
Author(s): Pace University Law School Land Use Law Center
Date: 2017

Pace/LULA Module 2 – Integrating Water Efficiency into the Comprehensive Plan
Author(s): Pace University Law School Land Use Law Center
Date: 2017

Pace/LULA Module 3 – Integrating Water Efficiency into the Zoning Code
Author(s): Pace University Law School Land Use Law Center
Date: 2017

Coordinated Planning Guide – A How-To Resource for Integrating Alternative Water Supply and Land Use Planning, Project 4623B
Author(s): Water Research Foundation, Brendle Group, and Western Resource Advocates
Date: 2018

Integrating Land Use and Water Resources: Planning to Support Water Supply Diversification, Project 4623A
Author(s): Prepared by Brendle Group and WRA for Water Research Foundation
Date: 2018

Western Growth and Sustainable Water Use: If There Are No "Natural Limits," Should We Worry About Water Supplies?
Author(s): Tarlock, Van de Wetering
Date: 2006

Growing Water Smart—Integrating Land Use and Water in Planning for Development
Author(s): Lincoln Institute, Sonoran Institute
Date: September 2017

Colorado River Urban Water Use Data Availability and Metrics
Author(s): Open Water Foundation, WaterDM
Date: Original Oct. 23, 2015; updated Feb. 12, 2018

Blueprint for OneWater
Author(s): Water Research Foundation, Brown and Caldwell
Date: January 3, 2017

Colorado WaterWise Website
Author(s): Colorado WaterWise
Date: N/A

EPA Water Conservation Plan Guidelines
Author(s): EPA
Date: August 6, 1998

Pathways to One Water
Author(s): WERF
Date: 2015

Protecting Water Resources with Higher-Density Development
Author(s): EPA's Development, Community, and Environment Division
Date: January 2006

Community Solutions for Stormwater Management: A Guide for Long-Term Planning
Author(s): EPA Office of Water
Date: October 2016

WRF/APA Integrated Urban Water Management for Planners
Author(s): John Y. Whitler and Jennifer Warner, WRF
Date: Sept/Oct 2014

City of Fort Collins Water Supply and Demand Policy
Author(s): Fort Collins Water Board, City Council, and City staff
Date: October 2, 2012

Colorado Water and Growth Dialogue, Draft Final Report
Author(s): Keystone Policy Center
Date: June 2018

Planners and Water
Author(s): William Cesanek, AICP, Vicki Elmer, Jennifer Graeff, AICP, American Planning Association, PAS Report 588
Date: August 2017

Sonoran Institute "Growing Water Smart" Webinars
Author(s): Harold Thomas, Brandon Ruiz, Marjo Curgus
Date: April - May 2018

Sonoran Institute "Growing Water Smart: Community Self-Assessment Questions"
Author(s):
Date: September 2017

NWCCOG Model Water Quality Protection Standards
Author(s):
Date: June 20, 2018

GUIDANCE ON IMPLEMENTING WATER CONSERVATION THROUGH LAND USE EFFORTS

Interviews Conducted and Scheduled

Conducted:

Provider	Interviewee(s)	Date
City of Cortez	Philip Johnson, Public Works Director Tracie Hughes, City Planner Neva Connelly, Associate Planner Rich Landreth, Water Superintendent	April 23, 2018
Dominion Water & Sanitation District	Beorn Courtney, President of Element Water Consulting, Consultant for Dominion	May 2, 2018
Denver Water	Greg Fisher, Manager of Demand Planning Jeff Tejral, Manager of Water Conservation	May 2, 2018
City of Aurora	Sarah Young, Planning Services Manager for Aurora Water Tim York, Manager of Water Conservation Karen Hancock, Planning Supervisor of Environmental Management Mindy Parnes, Planning Manager Daniel Krzyzanowski, Principal Planner Vern Adam, Engineering Services Manager Jonathan Villines, Design Engineer Alicia DuPree, Project Engineer Kelly Bish, Senior Planner/Landscape Architect	May 10, 2018
St. Charles Mesa Water District	David Simpson, District Manager	May 14, 2018
City of Monte Vista	Forrest Neuerburg, City Manager and Planner	May 23, 2018
Fort Collins-Loveland Water District	Chris Matkins, General Manager	June 7, 2018

Scheduled:

Provider	Interviewee(s)	Date
Pagosa Area Water and Sanitation District	Justin Ramsey, District Engineer/Manager Mat deGraaf, Utility Superintendent/Director	June 18, 2018
City of Westminster	Brian Donahue, Water Resources Analyst	June 19, 2018
Eagle River Water and Sanitation District	Maureen Mulcahy, Water Demand Management Coordinator	June 27, 2018

MEMORANDUM

TO: File

FROM: Anne Castle

SUBJECT: Discussion with Andre Dozier re Integrated Urban Water Model

DATE: July 9, 2018

CC: Erin Rugland

On July 6, 2018, I had a telephone conversation with Andre Dozier of Colorado State University. The purpose of the conversation was to gain an understanding of the tool that Andre is developing to estimate water use for different types of land use development.

Andre's tool is called the Integrated Urban Water Model (IUWM). It sits on the Environmental Resources Assessment and Management System (eRAMS) platform at Colorado State University. It is intended to streamline water use projections based on multiple types of land use decisions. Currently the model uses US Census data and the National Land Cover Dataset to project water use. Residential water use is based on a nationwide study by AquaCraft (now Water DM). Outdoor use is based on irrigated area extracted from the land cover dataset and on local temperature and precipitation data. The area for which water use is projected can be based on city boundaries, zip code, HUC code, or a polygon drawn by the user. The output is monthly demand for the area chosen, showing both indoor and outdoor use.

Options in the model allow the user to input the types of homes that are modeled (average, high efficiency, or user input gallons per household per day), the percent consumptive use, the average area irrigated for different types of development, and various other parameters. Scenarios can be constructed in this manner and compared against each other.

Andre and various partners including DRCOG, Westminster, and East Larimer County Water District will be applying for a grant from the Colorado Water Conservation Board (CWCB) to upgrade the IUWM. The grant application is due on August 1, 2018. The proposed upgrade will link the existing model to DRCOG's UrbanSim, which forecasts land use. Importantly, it will include the ability to use the water provider's own metered water use data. This upgrade is intended to allow cities to move quickly from their comprehensive plans to water use, based on their own projections about the types of development that will occur and actual water use data from the same area. GIS layers from comprehensive plans can be input to show existing and future land uses. If metered water data is available on a daily or hourly basis from advanced metering infrastructure (AMI), the model will be able to project peak daily or hourly water needs,

allowing decisions about water treatment capacity and other infrastructure. The upgraded model will also allow input of multiple sources of water including stormwater and graywater and show what additional sources might be needed.

When a new development is proposed, the water use can be projected based on actual use from similar areas in the city. Any parameter can be changed and the results compared.

Other water providers may ultimately be interested in partnering on this project, including Thornton, Fort Collins-Loveland Water District, and North Weld County Water District. Aurora may also be interested in the future.

Andre has a start-up company that will license the IUWM software from CSU and commercialize it. He envisions that basic options will be available for free, but that detailed construction of scenarios will require payment.

Andre believes that the tool produced by the Colorado Water and Growth Dialogue is the same as the tool that has been developed by Denver Water. He thinks that it provides a relatively coarse analysis, producing annual average demand, with every day being the same. It will not allow for forecast of peak demand or juggle multiple water sources. Andre hoped that Denver Water would be a partner in the request for CWCB funding, but that has not worked out.

MEMORANDUM

TO: File

FROM: Anne Castle

SUBJECT: Discussion with Holly Piza of Urban Drainage and Flood Control District

DATE: [July 10, 2018

CC: Erin Rugland

On July 9, 2018, I met with Holly Piza, Standards Development Manager, Operations and Development section of the Urban Drainage and Flood Control District. Jeff Tejral of Denver Water had suggested Holly as a good source of information on the requirements and practices of Urban Drainage that might intersect with water conservation and land use.

After hearing about our project to provide guidance to water suppliers on implementing water conservation through land use authorities, Holly immediately mentioned her concern about how new Urban Drainage guidance on grass buffers and grass swales will be interpreted.

The Colorado Department of Public Health and Environment (CDPHE) has issued a general permit to cover the "municipal separate storm sewer systems" (MS4) of specific, named cities and counties in Colorado. This general permit fulfills Clean Water Act responsibilities. The purpose of the general permit is to control runoff from areas in cities, towns, and counties, such as construction sites, roads, and parking lots.

The MS4 permit requires the implementation of control measures to reduce or prevent the discharge of pollutants. One means of doing so is through the reduction of runoff, which can be achieved through, among other means, by the use of grass buffers and swales. A new Urban Drainage fact sheet quantifies the amount of runoff reduction that will occur from the use of grass buffers and swales.

Holly's concern is that this guidance will encourage the use of Kentucky bluegrass or other high water use grasses. With respect to the type of grasses to be used, the fact sheet states:

> RPA [Receiving Pervious Area] vegetation should be turf grass (from seed or sod) with a uniform density of at least 80%. Dense native turf-forming grasses are recommended where a more natural look is desired. Turf grasses such as Kentucky bluegrass are also an option although require more irrigation. See the Revegetation chapter in Volume 2 of this manual with regard to seed mix selection, planting, and ground preparation.

The revegetation chapter of the Urban Drainage Criteria Manual provides:

> Plant species should be chosen that closely match the environmental conditions at the project site. Such plant species are typically adapted to water availability, salinity, elevations, and soil conditions.

We should consider an addition to the checklist that encourages water providers and land use authorities to discuss a requirement to use low water use vegetation for areas planted for stormwater control purposes.

Urban Drainage constructs and maintains many stormwater control facilities along major drainage ways in its seven-county jurisdictional area. They do a considerable amount of revegetation as part of this work and strive to use xeric vegetation that does not require supplemental irrigation after establishment. They want to achieve low maintenance costs and avoid the need for irrigation.

Urban Drainage is currently developing guidance that will address appropriate ways to assess soils for good infiltration qualities and recommend appropriate plant species. They are also working on a guidance document that will provide information on treating large sites in a manner that maintains and utilizes natural drainage patterns. Both of these documents will promote the use of grasses.

Urban Drainage has recently had a consultant review and list all the communities in its service area that require soil amendments. Holly has provided this document. We can use this information to provide examples of soil amendment ordinances.

Urban Drainage has no guidance that promotes the use of stormwater to replace other water sources. Holly reports that they would do so but for Colorado water law.

MEMORANDUM

TO: FILE

FROM: ANNE CASTLE

SUBJECT: DISCUSSION WITH ELLEN ROBERTS RE SENATE BILL 2015-008

DATE: FEBRUARY 22, 2018

CC: ERIN RUGLAND

On February 22, 2018, I met with Ellen Roberts to discuss the motivation for and history of Senate Bill 2015-008 (SB8). Ellen was a state senator and President of the Colorado Senate and introduced SB8. She represented a district in the southwestern part of the state, including Durango.

SB8 was a follow-on to Senate Bill 2014-017 (SB17) which initially would have set specific limits on irrigation of residential lots. SB17 garnered substantial opposition from the Colorado Municipal League (CML) and Colorado Counties Inc. (CCI), and ultimately morphed into a bill that required the Interim Water Resources Review Committee (IWRRC) to investigate best practices to limit municipal outdoor water consumption and proposed legislation, if appropriate, to facilitate implementation of such practices.

The motivation for SB17 was the very widespread feeling in the West Slope portion of Colorado that the Front Range municipalities were not sufficiently focused on water conservation. Because a significant portion of the water supplies for Front Range municipal suppliers comes from the West Slope, West Slope residents want to make sure that East Slope citizens are wisely using the existing supplies, especially before trying to divert more water. Ellen was looking for a way to specifically quantify and impose water conservation techniques and counter what she heard as a repeated refrain from Front Range water suppliers, that "we already do a great job on water conservation."

The IWRRC met over the summer of 2014 and held hearings in various different parts of the state and heard from citizens about their water concerns. They heard repeatedly from West Slope citizens that the Front Range needed to live with the same limits on water user that West Slope communities have. They heard that many municipal water providers in other western states have taken serious measures to implement water conservation but felt that Colorado and Front Range providers had not.

Ellen also spent time in the interim between the 2014 and 2015 sessions working with CML and Denver Water to craft what became SB8. She was concerned about the

disparity in resources and expertise in water conservation available to the big water providers like Denver and Aurora and those available to the many smaller providers. The provisions for training programs in SB8 were intended to give the little guys access to the same expertise and to expose the bigger providers to new ideas. Ultimately SB8 got support from CML, Denver Water, the Colorado Water Congress and a host of other organizations.

With respect to the provision we're concerned with, the requirement for addressing implementation of water conservation through land use efforts, Ellen said that it was an attempt to introduce some accountability for water conservation. While SB8 just requires an "evaluation" of best management practices, she said that she thought the inclusion of that evaluation in the Water Efficiency Plans (WEPs) would bring some transparency to the evaluation process and allow a comparison among different water providers. Again, because the Front Range providers all thought they were already doing a top-notch job on water conservation, having this required element of the WEPs would allow members of the public, and the General Assembly, to have a better sense of how each one was doing comparatively.

Ellen would be interested in serving on our Advisory Committee if meetings could be held by phone or travel expenses could be covered, since she lives in Durango. She remains quite interested in, and passionate about, this subject.

Water Efficiency Plans for Colorado Covered Entities
Results from Interviews with Colorado Water Providers
July 11, 2018

This project involves the drafting of guidance to water supply entities for evaluating best management practices to implement water conservation and demand management through land use efforts. This guidance will ultimately be incorporated as an addendum to the existing guidance issued by the Colorado Water Conservation Board for the preparation of Water Efficiency Plans. Anne Castle of the Getches-Wilkinson Center for Natural Resources, Energy, and the Environment at the University of Colorado and Erin Rugland of the Babbitt Center for Land and Water Policy are leading this project, which is supported by the Lincoln Institute for Land Policy and the Colorado Water Conservation Board (CWCB).

To better understand the needs of and opportunities available to Colorado water providers in terms of land use measures that could assist in water conservation efforts, Anne and Erin interviewed ten different water providers of varying sizes and locations within the state during from April through June 2018. These ten providers included some that are a subdivision of a municipality with land use authority under the same governmental umbrella and others that have no institutional relationship to the land use authority governing their service areas. The interviews were intended to reveal the current level of interaction between the water provider and the relevant land use authorities and the types of collaboration that have been occurring, and to solicit feedback about what would be helpful in the form of new guidance. The detailed write-ups for each interview can be obtained from the CWCB. This document highlights several interesting findings from these interviews.

The ten water providers interviewed were: Aurora Water; Town of Cortez Public Works; Denver Water; City of Monte Vista Public Works; City of Westminster Public Works and Utilities Department; Dominion Water and Sanitation District; Eagle River Water and Sanitation District (ERWSD); Fort Collins-Loveland Water District (FCLWD); Pagosa Area Water and Sanitation District (PAWSD); and St. Charles Mesa Water District. This group was made up of five municipal water providers in which land use authority is exercised by another subdivision within the municipality and five providers without land use authority. Several of these municipal water providers also serve water outside their own municipal boundaries in areas where land use is governed by other entities (Denver Water, Aurora Water, Westminster, Cortez) and several of the water districts serve water to areas governed by multiple land use jurisdictions (ERWSD, FCLWD, PAWSD). Personnel from the relevant planning departments were included in several of the interviews.

FINDINGS

Motivations for Water Conservation Differ but Conservation is a Universal Value

All of the providers interviewed expressed support for water conservation and efficiency and stated that the land use authorities within their service areas do as well. The drivers for

conservation are based on multiple variables including, among others, the ability of the water supplier's existing portfolio of water rights and infrastructure to support future growth, the cost and availability of additional rights to serve new customers, the cost sensitivity of the customer base, and the environmental consciousness of the service area. Limitations on supply create an understandable focus on delaying or eliminating the need to acquire more water rights, creating a direct cost savings. Water rights are becoming more expensive to acquire and increased capacity in infrastructure adds significant capital cost. While land use authorities express support for water conservation if asked, water suppliers pointed to the need for assistance in conveying that water scarcity is changing the dynamic for serving new customers. The anticipated increasing expense of water service can be mitigated by smarter development and conservation.

It was also pointed out that conservation reduces needs in the areas of water supply, water treatment, and distribution capacity, whereas no other component of water management can affect all three of these sectors. Many of the providers pointed to a recognition that Colorado has a semi-arid environment and that conservation provides the best means to prepare for a water scarce future. Conservation is critical to the ability to maintain the reliability of the water supply at full buildout. Many areas of Colorado are also concerned with the dry-up of agricultural land and reducing water needs diminishes pressure to acquire nearby agricultural water rights. Reducing the amount of diversion required to support future development and retaining that water in local streams was particularly important in western slope areas. Finally, it was pointed out that a strong water conservation ethic may assist a water supplier in its efforts to acquire rights located far from its service area.

Land Use Planning and Development Approval Influence Water Use Initially; Rate Structures of the Water Provider are the Primary Influence Thereafter

Several of the interviewed water providers pointed out that the designation of acceptable land uses by the planning authority and the subsequent approval of specific development proposals are significant factors in the water demand of new development. The land use authority can influence water demand through requirements for low water use plants, soil amendment, and efficient outdoor fixtures, turf limitations, encouraging or incentivizing density, and requiring water conservation commitments or adherence to green building standards. Conversely, requirements for turf landscaping of open space or stormwater detention areas, preferences for large single-family lots, and inattention to water use generally will likely result in increased demand. Involving the water supplier in the development approval process can inform developers of the potential to reduce tap fees and other costs through adjustments to the development proposal.

After the development is approved and occupancy occurs, it is the provider's water rates that primarily influence conservation. Because many Colorado providers already utilize inclining block rate structures that incentivize lower water use, the greatest potential for future savings may lie with the initial land use approval. The water provider's input should occur early in the development or rezoning process in order to achieve maximum results.

Small Municipal Providers May Lack Resources But May Be Collaborating More With Their Land Use Authorities

An understandable assumption is that smaller providers might be less integrated with their land use authorities than larger providers with more staff and resources. This assumption was not borne out, however, by the providers interviewed. Some smaller municipal providers had more interaction with their land use authority because of their close proximity; e.g., their offices were housed in the same building, down the hall from each other, making regular interaction easier. The water provider (usually the public works department) and land use planning department in these smaller entities are more likely to feel that they are both working toward the same goals, making coordination seamless and more productive. Thus, size does not necessarily correlate to the degree of integration between the land use planning and water supply function. Co-location of the water provider and planning department, while not always possible, can be quite influential in allowing and encouraging better collaboration. Because productive interaction is sometimes reliant on the personal relationship between the department representatives, formalization of the interactive process is prudent.

It is also true, however, that providers and land use authorities of similar size do not necessarily have the same level of interaction. Smaller non-municipal water districts in particular may have very little interaction with the land use authorities of the areas served. These small districts also have a wide variety of demographics, socioeconomic makeup, tax base, and funding priorities. Meaningful guidance must take this broad spectrum of needs into account.

Integration into the Development Approval Process

All of the water providers interviewed receive proposed development applications through the referral process (Colo. Rev. Stat. §§ 29-20-301 to -305; 30-28-133(3)(d); 30-28-136) and have the opportunity to comment. Several are invited to pre-application or sketch plan meetings with the developer. In many instances, however, this involvement is limited to a determination of whether the provider is able to serve new development, rather than a process that allows the provider to make recommendations related to water conservation or efficiency that can influence the configuration of the proposed development. A particular problem identified was a request at an early stage that a provider confirm the ability to serve a proposed development, but no follow-up involvement if the proposal changed. The final approved development may require substantial additional water, and the provider has an obligation to serve it, but was not informed of or involved in the discussions subsequent to the original proposal.

All of the providers interviewed strive to provide service to all development within their service areas, but also expressed the desire to be able to better inform new development about methods to increase water efficiency without degrading the quality of the developed product. Several providers stated that if they were able to engage more deeply at the beginning of the development approval process, they could recommend methods for reducing required tap sizes and other relatively minor changes that would have a significant effect on water use. Developers may not be concerned about the future cost of water to homebuyers, as they are not bearing this cost, but will likely be interested in methods for reduction of tap fees. There

was also a recognition that the water provider's participation in the development approval process should not increase complexity or the length of the review.

Several interviewed providers have established procedures for interaction between the water provider and the land use authority. Among the interviewees, this occurred more easily between municipal providers and the planning department under the same governmental umbrella. Such providers have been able to be more meaningfully involved in development reviews, in order to better understand and relay the water use implications of new development and its effect on existing water supplies. Establishing this involvement has been the result of years of collaboration with the land use authority and learning along the way where the best points of interaction are—a process that continues to be refined to this day.

Barriers

Few providers pointed to direct inconsistencies between their policies or goals and the land use authority's policies. It is also clear that incorporating water conservation into land use planning processes can occur regardless of the size of provider or its resources if the staff of each entity recognize the importance of collaboration and are motivated to work together. Time and inertia tend to be the major barriers to collaboration, rather than size or resources.

Water providers serving multiple land use authorities have found very different levels of interest in collaboration among those entities and that different communication strategies may be required. In several instances, the scheduling of regular meetings and formally opening lines of communication were essential to determining where the water provider could better fit into the development approval processes. When multiple jurisdictions are served by the same provider, having consistent regulations between land use authorities can reduce competition for development among the jurisdictions and allow the developers to deal with similar sets of rules.

Some providers find it useful to establish better communication procedures with other departments in addition to the planning department, including entities addressing open space, parks and recreation, community development, building, and public information. If a local government has established a cross-departmental agency to facilitate collaboration, that agency may also be useful as a convener.

Value of Sonoran Institute "Growing Water Smart" Training

Several of the interviewed water providers pointed to the Sonoran Institute training as a significant factor in instigating ongoing dialogue between the provider and one or more land use authorities. Subjects of ongoing dialogue include aligning population projections of the provider and local governments and adjusting the development approval process to ensure meaningful participation by the water provider.

Value of Aligning Data and Utilizing Data and Tools

Most providers relayed that, while they track water use by customer class (as is required for annual reporting to the CWCB), many land use authorities do not request this data. Those that

do tend to also be working more closely with the water providers and already be attuned to the manner in which new development impacts water supplies. One provider noted the problems stemming from having a different population projection than the land use authorities in the area served, including opposition to its water acquisition plans.

Water use data can be used by both the provider and the land use authority to calibrate assumed demand from new development. It can also be essential to determine compliance with development plans and water budgets. Advanced metering technology can provide real-time feedback on water use and allow early intervention if budgets are exceeded. One provider noted that the means of monitoring water use should always be considered in the development of water policies, so that water use constraints can be meaningfully enforced. Because water district service areas are not usually aligned with census tracts, Graphical Information System (GIS) technology can provide population information with an accuracy not previously achievable.

Several providers are interested in utilizing new tools being developed to more accurately forecast water demand and compare the differential impacts of different forms of development and water conservation requirements. Colorado State University and the Colorado Water and Growth Dialogue both have this type of tool available at present.

Integration of Water Providers into the Long-Range Planning Process Will Be Beneficial
While the value of participation by water providers in the development approval process was clearly noted, one provider also suggested that involvement in the long-range planning process could have the most far-reaching impact on water use. Having a well-written water element that addresses water conservation in the land use authority's comprehensive plan means that the planning department's checklist for approval of new development will include conservation concepts. The water provider can assist in writing an appropriate and realistic water element for the comprehensive plan that will influence the overall water use of the community.

One planning department representative noted that the water provider can be very helpful in determining appropriate zoning categories. The example provided was a "retail zoning" designation that could include both very low water use retail stores and very high water use restaurants. Estimating future water demand from this zoning area has a large margin of error, particularly in a period when traditional retail is declining and restaurants are increasing. Obtaining metered water use data from different types of retail users and utilizing this information to create more targeted zoning categories can allow more accurate forecasts of future demand.

Form of Guidance Desired
Most of the interviewees would benefit from an outline of options for implementing water conservation through land use authorities. There was little appetite for state-imposed mandates. All interviewed water providers thought that a checklist of best practices would be helpful, recognizing that there is no "one-size-fits-all" solution.

Water Efficiency Plans for Colorado Covered Entities

Best Practices for Implementing Water Conservation and Demand Management Through Land Use Efforts

Draft Outline for Guidance to Comply with Colo. Rev. Stat. § 37-60-126(4)(f)(I)

This checklist addresses the requirement, added to the components of Water Efficiency Plans in 2015, for an evaluation of best management practices for implementing water conservation and demand management through land use efforts. It is intended as an addition to the existing guidance on the preparation of Water Efficiency Plans and uses the same organization of potential water conservation activities (Foundational, Targeted Technical Assistance and Incentives, Ordinances and Regulations, Education and Outreach). It includes only activities where a nexus exists between the water utility and the land use planning authority.

It should be noted that some of the techniques listed, particularly those in the section on Ordinances and Regulations, are already identified in the existing guidance. The intent of including such activities in this checklist is to encourage consideration of whether the technique could be implemented through cooperation between the water utility and the land use authority in a manner that would not be possible or practical by the water utility alone.

FOUNDATIONAL ACTIVITIES

- Implement initial and regular discussions between the water utility and the planning or development department of the land use authority
  - Form a Water and Land Use Planning Team with members of both the water utility and the land use planning department. Alternatively, include land use/water integration in the responsibilities of an existing cross-department coordinating agency
  - Educate members of the team or agency about the goals, opportunities, challenges, and anticipated projects of both the water utility and the planning department
  - Ensure that members of the team or agency are educated about:
    - Procedures used by the water supplier to determine tap size and fees, meter setting, landscape plan requirements, indoor fixture standards, water use regulations, monitoring, revenue stability needs, infrastructure needs and plans, and the impact of development on such needs
    - The procedures used by the planning department to approve new development, encourage growth in particular areas, and its general development goals
- Establish a procedure for regular contact between the water utility and the planning department
  - Provide a means for participation by the water utility in pre-application meetings with developers, at specific points in the development review process, and/or in rezoning applications for land within the utility service area
  - Discuss the possibility of encouraging development that reduces infrastructure needs

- Ensure that information concerning water and water conservation on the respective websites of the water utility and the planning department is consistent and cross-linked
- Integrate water conservation into the land use authority's comprehensive or master planning processes
  - Create a formal mechanism for input in the long-range planning processes, both for the water utility during comprehensive or master planning by the planning department and for the planning department during water resources planning by the water utility
  - Incorporate a water element into the comprehensive or master plan or strengthen the existing element
    - Evaluate the extent to which the comp plan already addresses water
    - Draft a water element for the comp plan addressing conservation (complete with an introduction, goals, objectives, strategies, and implementation techniques)
    - Review the comp plan to identify other areas where water conservation, demand management, or water efficiency concepts could be incorporated
  - Encourage water-conserving land use patterns in appropriate areas (density, infill development)
- Align the population and growth projections of the water utility and the planning department, address and resolve inconsistencies
- Address monitoring for compliance with water use regulations and water-related development approval requirements and enforcement
  - Allocate responsibility for pre- and post-occupancy inspections as appropriate
  - Provide for coordination between observations of water waste or violations by the water utility staff and action by the enforcement authority
- Integrate other planning efforts between the water utility and the planning department, such as Integrated Water Management Plans, Neighborhood Plans, Drought Mitigation Plans, Regional Watershed Plans, Stream Management Plans, etc
- Inform decision-makers (City Council, County Commissioners, water district board of directors) about actions taken or proposed, get feedback, readjust

TARGETED TECHNICAL ASSISTANCE AND INCENTIVES

- Target municipal or county buildings and facilities for water efficiency improvements
  - Use as demonstration projects for water efficiency
  - Measure and communicate water savings
  - Give tours, provide educational materials
- Water utility and planning department cooperate on the management of water demand of the water utility's largest customers (schools, parks, golf courses, industrial facilities, etc.)
- Management of new customer demands
  - Developer incentives—density bonus, infill incentives, tap fee reduction program
  - Cooperate to define and encourage adoption of water-smart home options (see Colo. Rev. Stat. § 38-35.7-107(1)(a))
  - Tap fees and rate structures incentivizing conservation
  - Pre-application water meetings with developer

ORDINANCES AND REGULATIONS

- Ordinance prohibiting water waste
- Water conservation ordinances
    - Time of day watering restrictions (e.g., no outside watering between 10am and 6pm)
    - Day of week watering restrictions (e.g., odd house numbers irrigate M-W-F, even house numbers irrigate T-Th-S; or limit to watering 3 days/week without specification)
    - Seasonal limit on outside irrigation (e.g., prohibited between Nov. and Mar.)
    - Enabling/encouraging graywater use for nonpotable purposes
    - Allocate available new taps through point system incentivizing conservation
- Water efficient landscape code
    - Xeriscape requirements
    - Turf limitations or minimums for low-water use vegetation for new development
    - Native/drought-resistant plant list
    - Hydro-zone irrigation techniques, low-impact development
    - Rainwater capture/water harvesting
    - Soil amendment requirements
    - Rain sensors
    - Discouragement/prohibition of invasive, high water use trees and shrubs
    - Outdoor fixture requirements, for example, must meet Green Building standards
- Certification/education requirements - consider adoption by land use authority
    - Landscape professional training and/or certification
    - Irrigation system installer training and/or certification
- Encourage decreased water use and more compact infrastructure through land development patterns
    - Encourage increased residential density or compact, mixed-use development through developer incentives, such as a density bonus or infill incentives
    - Encourage cluster unit development
    - Development offsets (e.g., reduced fees, increased credits, or preference in water allocation in return for implementation of water efficiency measures)
    - Designate an urban growth boundary with a strategy for targeted growth
    - Prioritize infill development
    - Allow more varieties of multi-family and attached housing that decrease water use
- Zoning codes and rezoning
    - Adopt overlay zone addressing water demand and conservation
    - Designate a growth management area outside jurisdictional boundaries where water use is addressed
    - Condition rezoning or PUDs on low water usage commitments
- Subdivision or site plan regulations addressing water use
- Building and plumbing codes
    - Adopt a form of green building guidelines (e.g., LEED guidelines for water conservation, national green building code, GreenCO standards)
    - Require green infrastructure where appropriate

- Ordinances Addressing Existing Buildings
    - Require retrofit on resale to include low water use fixtures
    - Require retrofit when new building permit required to include low water use fixtures
- Regional coordination for consistency and de-escalation of competition among jurisdictions for new development
    - Consider making water conservation ordinances consistent among land use authorities in the region
    - Consider uniform landscape code for the region
    - Consider uniform irrigation regulations for the region
    - Consider uniform landscape and irrigation contractor certifications in the region
    - Consider coordinating education and outreach across the region
    - Consider uniform adoption of green building guidelines or standards

EDUCATION/OUTREACH ACTIVITIES

- Water utility and planning department work together to:
    - Provide public information and education on water conservation
    - Develop and disseminate landscape water budgets and information
    - Develop and provide landscape efficiency evaluations, irrigation audits, green building guidelines
    - Hold public meetings for input on water policy in the comprehensive or master plan
    - Conduct a public survey on which land use mechanisms for water conservation citizens and customers would most like to see implemented
- Planning department provides information on water conservation techniques, incentives, and requirements to all developers
- Water utility and planning department work together to communicate the benefits of water conservation to the community, such as:
    - Allows service to additional growth if water supplies are limited
    - Services more customers without increasing costs
    - Reduces need to dry up agricultural land
    - Mitigates drought impacts and increases drought resilience
    - Eliminates or delays need for infrastructure and associated costs
    - Eliminates need for acquiring additional water rights
    - Increases water system reliability, stability, and resiliency
    - Reduces costs to customers
    - Reduces water and wastewater treatment needs and effluent discharge
    - Reduces surface water runoff during irrigation season
    - May contribute to maintenance of instream flows by reducing diversions
    - Demonstrates a commitment to the sustainability of the community and leadership in proper stewardship of a public resource

TASK 2

GUIDANCE
ON IMPLEMENTING WATER CONSERVATION THROUGH LAND USE EFFORTS
Advisory Committee Meeting

June 12, 2018
1313 Sherman Street, Room 723
Denver, CO

Attendees: Anne Castle, Erin Rugland, Kevin Reidy, Anne Miller, Ellen Roberts, Morgan Cullen, Brian Donahue, Jeff Tejral
By Phone: Jim Holway, Torie Jarvis, Drew Beckwith, Amelia Nuding, Sarah Martin, Beorn Courtney

Introductions and Background on Guidance project (9:00 AM)

The purpose of this project is to add an addendum to the existing Colorado Water Conservation Board Guidance for writing Water Efficiency Plans, per 2015 legislation requiring that such plans include water management strategies that can be implemented through land use planning efforts. The existing guidance is in-depth and used extensively by water providers, but has not been updated to include land use integration.

This project is being funded by a CWCB Water Plan Grant, as well as money from the Lincoln Institute of Land Policy.

Thus far, Anne Castle and Erin Rugland have undertaken an extensive literature review on this topic, which resulted in the list of best practices that was shared with the Advisory Committee for feedback. Additionally, they have completed 7 interviews with water providers of varying sizes, geographic location, and authority, and have 3 more scheduled. These are conducted according to a pre-determined set of questions, and the writeups resulting from these interviews are shared with the interviewees, who review them to confirm accuracy. The interviews have confirmed that a list of best practices would be a helpful addition to the existing guidance on WEPs.

The purpose of this meeting is for the Advisory Committee to provide feedback on the work done thus far, including discussion of the best practices list, and discuss the role the Advisory Committee should play in this project.

Discussion of best approach to provide helpful guidance to water suppliers (9:15 AM) (checklist, narrative, addendum to existing guidance, revision of worksheets in existing guidance, all of the above, other?)

The current direction of the final deliverable is to create a best practice list of land use techniques for water conservation, and include relevant examples and contact information for each best practice. These would not be full case studies, but would provide enough information for those who read the list to be able to contact someone who has successfully implemented a strategy for more information. The Advisory Committee suggested:

- Including multiple examples that demonstrate implementation among providers of different sizes and geographies
- Including a "challenge statement" for each example that illustrates why the provider implemented the best practice
    - This should cover why the provider implemented something, how they did it, what the outcome was, and how they measured success
- Including context that describes the scale, size, and cost for each best practice

The conversation then turned to clarify, for the Advisory Committee, the current requirements and outcomes of WEPs. The outcome of the existing statute requirements and guidance is that providers will write a section for the required elements in their plan, in a narrative form that explains how they considered the requirement, implementation of it, and what the expected results will be. Worksheets are included in the existing guidance that help providers consider which water conservation strategies to adopt, and from these, providers usually choose a selection of strategies to explain whether they will implement them and why. This addendum will need to similarly provide something, whether a best practice list or other addition, that can help providers think through each strategy and then write a narrative section in their plan about what they may implement. Those on the Advisory Committee that have written or reviewed WEPs said that this fits into the current process, and thus would not surprise or alarm those that write and update WEPs. The only enforcement mechanism for WEP requirements is that WEPs must be CWCB-approved in order to qualify for CWCB grant money.

The conversation also turned toward metrics. There was desire among the Advisory Committee, on this topic overall, to be able to better recommend metrics that providers can use to track their success. However, it can be hard to track water savings that result from changes in land use efforts; and, land use efforts can have social or behavioral impacts that may not be quantifiable. The Advisory Committee suggested including an educational component in this project about the importance of providers choosing a metric, providing some example metrics, and explaining the importance of evaluating best practices by more than just the bottom line, or costs versus water savings. In particular, metrics are desired to better help communities across the state demonstrate to each other and over time that water management is improving, as there is a public perception of water waste, and tension between communities on this issue. Additionally, WEP updates must include an estimated water savings from implementation of the previous WEP, making metrics necessary for updates. The Committee also expressed desire for tools that can help providers calculate water and monetary savings from land use efforts; creation of such a tool is beyond the scope of this project, but the addendum could make reference to ongoing efforts on this subject. The Committee also discussed the idea of creating standards or levels of integration that help a provider understand introductory versus more advanced techniques.

Discussion of draft checklist (9:45 AM)
(what's missing, what should be revised or omitted?)

The Advisory Committee discussed the actual makeup of the draft checklist only briefly. This discussion included further suggestions about encouraging and providing examples of metrics to help track and measure success, taking a broader definition than just demand management and conservation measures, to further draw out the land use implications of each

strategy, and that the “Foundational” category could be further broken down into topic areas, such as communication, coordinated planning, and monitoring/enforcement. These categories could provide a narrower scope in which to decide which metrics would be most helpful and applicable to recommend to providers. Several Advisory Committee members provided specific comments on the best practice list via email.

Recommendations (10:20 AM)
(further literature review, further interviews and discussions, most efficient engagement of Advisory Committee going forward)

The Advisory Committee discussed efficient engagement of the Committee going forward. Many participants expressed willingness and interest in getting feedback from their networks on this project, and particularly the draft checklist of best practices. The next steps will be to write a first draft of the checklist with a narrative context, and provide that to the Advisory Committee for further review.

Adjourn (10:30 AM)

Water Efficiency Plan Addendum Project

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TASK 3

Best Practices for Implementing Water Conservation and Demand Management Through Land Use Planning Efforts

Draft Guidance
October 12, 2018

Prepared for:

Colorado Water Conservation Board 1313 Sherman St., Room 721 Denver, CO 80203

Prepared by:

Anne J. Castle, Getches-Wilkinson Center, University of Colorado
Erin Rugland, Babbitt Center for Land and Water Policy

ACKNOWLEDGEMENTS

The development of this *Guidance on Best Practices for Implementing Water Conservation and Demand Management Through Land Use Planning Efforts* was a collaborative effort of the Getches-Wilkinson Center for Natural Resources, Energy, and the Environment at the University of Colorado and the Babbitt Center for Land and Water Policy, a center of the Lincoln Institute of Land Policy, under the guidance of the Colorado Water Conservation Board. The Guidance has been developed through an extensive review of literature on the subject of integrating land use and water planning, interviews with Colorado water providers, valuable input from an Advisory Committee, and a number of discussions with knowledgeable individuals. The authors would particularly like to thank:

Aurora Water
Town of Cortez
Denver Water
Dominion Water and Sanitation District
Eagle River Water and Sanitation District
Fort Collins-Loveland Water District
City of Monte Vista
Pagosa Area Water and Sanitation District
St. Charles Mesa Water District
City of Westminster

and the following individuals: Brian Donahue, Amy Johnson, Andrew Spurgin, Jeff Tejral, Greg Fisher, Maureen Mulcahy, Micah Schuette, Tim York, Karen Hancock, Sarah Young, Mindy Parnes, Daniel Krzyzanowski, Vern Adam, Jonathan Villines, Alicia DuPree, Kelly Bish, Chris Matkins, Justin Ramsey, Mat deGraaf, Forrest Neuerburg, Philip Johnson, Tracie Hughes, Neva Connelly, Rich Landreth, David Simpson, and Beorn Courtney, for participating in interviews that guided this effort; and Ellen Roberts, André Dozier, and Holly Piza for providing their helpful comments.

The insightful and experienced Advisory Committee for this work consisted of: Kevin Reidy, Colorado Water Conservation Board; Anne Miller, Colorado Department of Local Affairs; Morgan Cullen, Colorado Municipal League; Michael Valdez, Special District Association; Peter Pollock, Lincoln Institute for Land Policy; Drew Beckwith, Western Resource Advocates; Amelia Nuding, Western Resource Advocates; Kathy Chandler-Henry, Eagle County Commissioner; Ellen Roberts, Durango; Brian Donahue, City of Westminster; Beorn Courtney, Element Consulting; Sarah Martin, North Front Range Metropolitan Planning Organization; Jeff Tejral, Denver Water; Torie Jarvis, Northwest Colorado Council of Governments, Quantity and Quality Committee; and Jim Holway, Babbitt Center for Land and Water Policy.

The authors are grateful for the funding support of the Colorado Water Conservation Board.

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SCOPE OF THIS GUIDANCE

This guidance addresses the State of Colorado requirement that a Water Efficiency Plan (WEP or Plan) include an evaluation of best management practices for implementing water conservation through land use planning efforts. Senate Bill 2015-008 requires that WEPs evaluate "best management practices for water demand management, water efficiency, and water conservation that may be implemented through land use planning efforts."[1] A measurable objective in Colorado's Water Plan is that by 2025, 75 percent of Coloradans will live in communities that have incorporated water-saving actions into land use planning. This guidance is intended to further both of these goals.

This addendum augments, and does not replace, the existing 2012 Municipal Water Efficiency Plan Guidance Document of the Colorado Water Conservation Board (2012 Guidance). It uses the same organization of potential water conservation activities as is used in the 2012 Guidance and that originated in the 2010 Statewide Water Supply Initiative Conservation Levels Framework. The various types of water conservation activities in this framework are divided into: (1) Foundational; (2) Targeted Technical Assistance and Incentives; (3) Ordinances and Regulations; and (4) Education and Outreach. Foundational activities are intended to establish a platform for ongoing communication and collaboration between the water provider and the land use authorities that govern development within the provider's service area. The next three categories can build on the foundational relationship established between the water and land use professionals.

The techniques and activities identified in this addendum include hyperlinks to descriptions, research, or implementation examples that further illustrate each concept.

Not all best practices listed in this addendum will be applicable to or suitable for every water provider. The information presented here is intended for review by water providers to determine which techniques might be useful to them, based on their particular needs, size, geography, water availability and cost, development level and potential, and likely citizen and elected official interest and acceptance. More detailed information is provided on each technique so that water providers can delve into those that are of the most interest.

Some of the techniques listed, particularly those in the chapter on Ordinances and Regulations, are already identified in the 2012 Guidance. The inclusion of such activities in this addendum is intended to encourage consideration of whether cooperation between the water provider and land use authority creates additional potential for implementation of water conservation or demand management that would not be possible or practical by the water provider alone.

The links in this addendum are current as of the date of publication. The authors and Colorado Water Conservation Board are not responsible should links and resources change or become inactive over time. For the most up to date information, please consult the primary source of the reference.

[1] Now codified at Colo. Rev. Stat. § 37-60-126(4)(f)(I).

BACKGROUND ON THE CONNECTION BETWEEN LAND USE PLANNING AND WATER EFFICIENCY

Water efficiency planning is a tool for demand-side water planning to help meet long-term water supply needs. It provides a framework for water providers to consider which water efficiency strategies will best bolster water supplies, provide resilience, and contribute to quality of life for customers. Incorporating land use planning efforts into the development of water efficiency strategies provides a new suite of opportunities to achieve greater water savings.

Colorado's Water Conservation Act was amended in 2015 to require an evaluation of best practices for implementing water conservation through land use measures. This legislation recognized that water demand is directly related to the land use of any given site and is intended to support additional water savings that will in turn provide enhanced ability to absorb new growth and contribute to better resiliency of existing supplies. The designation of acceptable land uses by the planning authority in its long-range planning process and the subsequent approval of specific development proposals are significant factors in the overall water demand of new development. There are numerous ways in which a land use authority can influence water demand including, for example, requirements or incentives for low water use landscaping, soil amendment standards, efficient outdoor fixture requirements, turf limitations, encouraging or incentivizing density of new development, and requiring water conservation commitments or adherence to green building standards. Conversely, other land use decisions can result in unnecessary increased water demand, such as requirements for turf landscaping of open space or stormwater detention areas, preferences for large single-family lots, and inattention to water use generally.

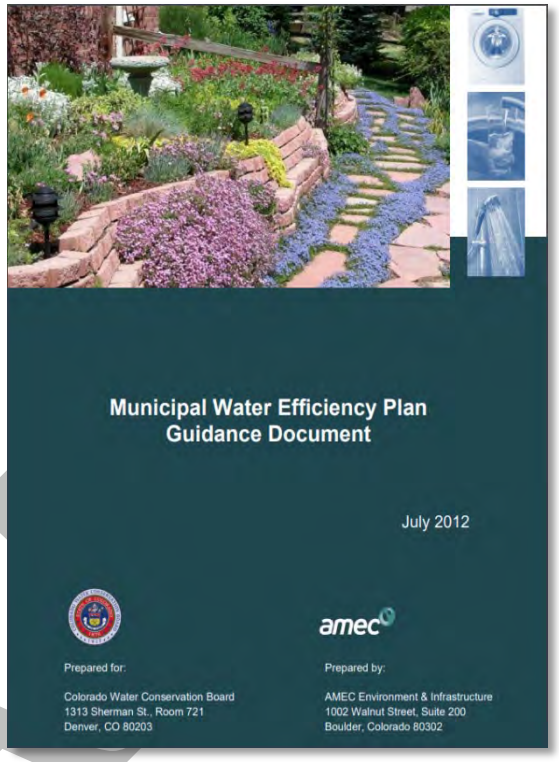
Coordination between water providers and land use planners in the land use planning and development approval processes can ensure that planners and developers are aware of the water impacts of the proposed development and of the potential to reduce tap fees and ultimate costs to consumers through adjustments to the development proposal. This type of coordination requires more from the water provider than simply responding to a referral from the land use authority. True integration of the water supply and land use planning functions will also help ensure that planned development does not exceed the water provider's ability to adequately supply services considering water resources and infrastructure limitations. The need for and location of additional infrastructure to serve proposed development can be a significant cost issue, and early discussion of these constraints and associated opportunities to reduce costs can significantly benefit the developer.

After development is approved and occupancy occurs, it is the water provider's rates, tap fees, and policies that primarily influence conservation. Because many Colorado providers already utilize inclining block rate structures, tap fees that are based on the amount of water the development will need, and many other techniques that incentivize lower water use, **the greatest potential for future additional savings may lie with the initial land use approval**. The water provider's input should occur early in the development or rezoning process to maximize water conservation results.

Water providers should work with the land use authorities governing their service areas to determine which activities will best serve their current and future customers. The potential costs and benefits of selected strategies should be evaluated, and consideration should be given to non-quantifiable benefits using a triple bottom line approach (economic, social, environmental). Selected techniques may result in per capita water savings that can be made available to serve future growth or support more resilience in overall water supplies.

Many of the techniques described in this guidance on best practices for implementing water conservation through land use planning efforts are consistent with a "One Water" approach, also known as Integrated Water Resource Management. According to the Water Research Foundation, One Water is "an integrated planning and implementation approach to managing finite water resources for long-term resilience and reliability, meeting both community and ecosystem needs." This approach is intended to provide greater resilience and reliability, opportunities to optimize regional infrastructure, and increased coordination among agencies and departments, all within the context of economic growth. Because the components of an integrated water system come under the responsibility of different agencies, collaborative planning and action is required to create a plan that will capitalize on the tools and resources available. Greater integration of the land use planning function and the water supply and conservation function is one element in the overall One Water framework. Water providers and land use planners can benefit from a review of the Blueprint for One Water as part of the compilation of long range planning documents and Water Efficiency Plans.

INCORPORATING LAND USE PLANNING EFFORTS INTO A WATER EFFICIENCY PLAN



2012 Guidance for Water Efficiency Plans

Water Efficiency Plans (WEPs) have been required for Covered Entities in Colorado since 1991[2] and over 80 water providers serving approximately three-quarters of the state's population have filed these plans. In 2012, the Colorado Water Conservation Board (CWCB) adopted detailed guidance for creating these plans, with an accompanying Sample Water Efficiency Plan. This guidance has been closely adhered to by most providers submitting WEPs. To comply with the requirement added in 2015, the water provider's evaluation of land use planning measures should be addressed in the Plan. Specific land use planning efforts that are being considered or have been adopted should be incorporated into several existing WEP sections, including:

Demand forecasting - population projections and land use categories, along with their descriptions, should be obtained through collaboration with the land use authority. See 2012 Guidance pp. 33-35. Designated land use categories can significantly impact water usage and should be considered in addition to population estimates in projecting demand.

Forecast modified water demands reflecting estimated water efficiency savings – estimated savings should reflect savings gained through collaboration with the land use authority. See 2012 Guidance pp. 36-39. While it is often difficult to project estimated water savings, those resulting from land use techniques may prove particularly challenging. Savings from strategies such as incentives for low water use landscaping, turf limits, or cluster development incentives may be estimated using conventional techniques involving estimated uptake rates, average savings per lot, and development projections. Techniques directed at better collaboration between water provider and land use authority personnel may be evaluated through the same type of analysis currently used for education and outreach activities. Methodologies for estimating water savings from increased density of development and landscaping requirements are described in the Keystone Policy Center's 2018 Colorado Water and Growth Dialogue Report (see pp. 9-20). The Water Research Foundation's Coordinated Planning Guide – A How-To Resource for Integrating Alternative Water Supply and Land Use Planning contains

[2] Initially called Water Use Efficiency Plans, the terms "water conservation plan," "water efficiency plan," "water use efficiency plan," and simply "plan" are now used interchangeably and made equivalent in the statutory definition. See Colo. Rev. Stat. § 37-60-126(1)(h).

estimates of water savings from a variety of land use techniques and provides examples and links to reference information (see pp. 17-25). Calculation tools are available for estimating water savings resulting from proposed new development and comparing demand for different configurations of development (see Section 2 of the Foundational Activities chapter of this Addendum for more information).

Evaluation and selection of water efficiency activities – land use techniques should be included in this evaluation and selection process. A checklist of the various best management practices described in this Addendum is provided below. The 2012 Guidance recommends a four-phase process to assess and identify which water efficiency activities are the best fit for the water provider. See 2012 Guidance pp. 42-44. Worksheets D through G in the 2012 Guidance assist in the evaluation and selection process. Modified versions of these worksheets that include land use planning efforts are included in Appendix B: Worksheets to Guide Selection Process.

Implementation and monitoring – providers should work with the land use authority on implementation and monitoring of the land use activities selected in the Plan. As with any water efficiency activity, a plan for implementation is essential, together with ongoing monitoring to ensure that anticipated results are being achieved or to allow adjustment. These steps are also required by statute. The monitoring techniques adopted will allow the ongoing evaluation of effectiveness contemplated for all water efficiency activities and will inform future Water Efficiency Plans. See 2012 Guidance pp. 56-60.

Colo. Rev. Stat. § 37-60-126(4)(c)
Requirement: A Plan must include "The steps the covered entity used to develop, and will use to implement, monitor, review, and revise, its water conservation plan."

The Colorado Water Conservation Board can provide financial assistance for water efficiency planning and implementation of Water Efficiency Plans through its Water Efficiency Grant Program.

USING THE MODEL TEMPLATE

The Model Template provided in the 2012 Guidance (pp. 70-86) provides a framework that water providers can use to develop WEPs. Additions to the Model Template to include land use planning efforts are:

Section 3.1 of the Model Template on Water Efficiency and Water Supply Planning describes how modifications to water acquisitions and/or planned capital improvements may result from demand reductions through enhanced water efficiency activities. Water providers should include a separate subsection here on how land use planning efforts affecting water conservation could modify planned acquisitions or improvements. See 2012 Guidance pp. 75-76.

Section 4 of the Model Template describes the Selection of Water Efficiency Activities. This section will include any land use planning efforts evaluated. The selected best practices for integrating land use planning efforts into water conservation should be included with the lists of Foundational Activities (Section 4.2.1), Targeted Technical Assistance and Incentives (Section 4.2.2), Ordinances and Regulations (Section 4.2.3), and Education Activities (Section 4.2.4) to be undertaken by the water provider. Revised Worksheets D through G, provided in Appendix B of this Addendum, can help guide the Summary of Selection Process described by Section 4.1 of the Model Template. See 2012 Guidance pp. 77-84. Some may find it helpful to go through the checklist below of best management practices first, determine which practices are of most interest, and then delve more deeply into the relevant sections of this Addendum for more information and examples on any of the practices.

Section 5 of the Model Template addresses the Implementation and Monitoring Plan. This section should describe how any land use planning efforts that have been selected to be pursued will be implemented and monitored. See 2012 Guidance pp. 84-86.

NOTE ON TERMINOLOGY

Throughout this Addendum, the term "planning department" is used to refer to the entity within the relevant land use authority with responsibility for new development approvals and the initial draft of and modifications to long-range planning documents like the comprehensive plan or zoning regulations. This term is used generically, recognizing that the applicable department in a local government may be referred to as Development Services, Community Planning, Planning and Building, or some similar name. In smaller jurisdictions, there may not be a separate department or dedicated staff person, but a designated official—such as a town clerk or public works staff—that provides planning services. All such entities or personnel are included in the term "planning department."

CHECKLIST OF BEST MANAGEMENT PRACTICES

Following is a checklist of the best management practices for implementing water conservation and demand management through land use planning efforts. Each of these practices is addressed in further detail in this Addendum. Water providers may wish to examine this checklist to determine which of the many techniques described might be most useful in their particular circumstances, and then review the detail provided for the techniques selected.

Foundational Activities	✔
1. Establish Regular Contact and Information Sharing	
a. Initiate discussions between water and land use authorities	
b. Establish a procedure for regular meetings	
c. Hold joint meetings among boards/elected officials	
d. Participate in training on land/water integration	
2. Align Data and Establish Coordinated Procedures	
a. Conduct a self-assessment on data alignment	
b. Align population and growth projections	
c. Utilize tools to estimate water demand in new development	
d. Measure and communicate water savings	
e. Monitor for compliance with development regulations	
3. Water Provider Participates in Development Approval	
a. Meaningfully include water provider in development review process	
b. Final development plan is consistent with water provider's approval	
c. Coordinate standards for adequate water supply requirements	
d. Development agreements impose water conservation requirements	
4. Integrate Long Term Land Use and Water Planning	
a. Integrate water conservation into the comprehensive plan	
b. Concentrate development within existing water service areas	
c. Integrate other planning efforts between water and planning entities	
Targeted Technical Assistance and Incentives	✔
1. Provide Developer Incentives to Reduce Demand	
2. Encourage Water Efficient Land Development Patterns	
a. Encourage increased residential density or mixed-use development	
b. Encourage cluster unit development	
c. Development offsets	
3. Collaborate to Adopt Water Smart Home Options	
4. Low Use Water Fixtures and Landscapes in Demonstration Homes	
5. Provide Model Landscape Plans	
6. Encourage Rainwater Capture and Use	
7. Incentivize Reduced Residential Irrigation	
Ordinances and Regulations	✔
1. Evaluate Unintentional Barriers to Water Conservation	
2. Adopt or Strengthen Water Conservation Ordinances	
a. Ordinances prohibiting water waste	
b. Watering or irrigation restrictions	
3. Zoning Code Reform	
a. Condition rezoning or discretionary reviews on low water use commitments	
b. Include water demands among considerations for annexation	

c. Change zoning to allow for multi-family and attached housing	
d. Designate zoning categories with narrower water use implications	
e. Overlay zones	
f. Growth management areas or growth boundary	
4. Subdivision Regulation Reform	
a. Require water conservation in development permit applications	
b. Structure development agreements to include water conservation commitments	
5. Require Water Efficiency and Compact Infrastructure	
a. Water demand offset requirements	
b. Prioritize infill development	
c. Stormwater management policies	
6. Adopt or Strengthen Landscape Regulations	
a. Water efficient landscape codes, design/installation rules, and regulations	
b. Require certification or registration of landscape professionals	
c. Adopt a landscape ordinance	
7. Building and Plumbing Code Reform	
a. Codify water efficiency standards set forth by green building codes	
b. Establish development bonuses for development that is green building certified	
8. Retrofit Requirements for Existing Buildings	
a. Require retrofit on resale to include low water use fixtures	
b. Require retrofit of low water use fixtures when new building permits are required	
9. Regional Coordination	
a. Consistent water conservation requirements	
b. Uniform landscape codes or irrigation regulations	
c. Uniform landscape and irrigation contractor certifications	
d. Coordinated education and outreach	
e. Uniform promotion, incentives, or requirements for green building codes	
Education Activities	✔
1. Cross-Link Water Information Online	
2. Work Together on Public Information and Outreach	
a. Provide information and education on water conservation	
b. Provide landscape water budgets and information	
c. Provide landscape efficiency evaluations, irrigation audits, and green building codes	
d. Hold public meetings for input on water policy in planning documents	
e. Conduct a survey on land use mechanisms to implement	
f. Provide information on effective water conservation measures	
3. Use Public Facilities as Demonstration Projects	
a. Measure and communicate water savings of the building	
b. Give tours and/or provide educational materials	
4. Jointly Engage with Development Community	
5. Work Together to Communicate Benefits of Conservation	
6. Share Case Studies of Success with Others	
7. Coordinate Education and Outreach Across the Region	

BEST PRACTICES FOR IMPLEMENTING WATER EFFICIENCY THROUGH LAND USE PLANNING EFFORTS

FOUNDATIONAL ACTIVITIES

These activities address the establishment of a working relationship between the water provider and the land use authority that will form the basis for regular interaction about the utilization of water in the community and collaboration on specific development proposals. Each water provider should review the techniques suggested here and determine which might work for its own community. Multiple techniques are included, recognizing that there is no "one-size-fits-all" approach.

1. *Establish Regular Contact and Sharing of Information Between Water Provider and Planning Department*
   This is the basic building block of better integration of water planning and land use planning to improve water conservation. Land use planners and water provider personnel must establish personal relationships that support a basic understanding of the goals and challenges of each group and allow free exchange of ideas and information. Training on this initial integration is available–see Breaking Down Silos: Integrating Water Efficiency Into Land Use Planning: A Guide for Colorado Communities, and associated webinar.

   a. Initiate discussions between the water provider and the planning or development department of the land use authority. The leader of such discussions will vary according to the circumstances, but the water provider should ensure that this dialogue is taking place and instigate it if necessary. See Breaking Down Silos, pp. 31-33.

      - Form a Water and Land Use Planning Team with members of both the water provider and the land use planning department.

Case Study – City of Monte Vista

Even small municipalities can thoroughly integrate their water and land use planning activities. In Monte Vista, population 4,500, the senior management team, including the heads of the Public Works and Community Development Departments, meets once or twice a month to discuss new developments and think through "what if" scenarios including water impacts. When an annexation is proposed, the implications for water supply are at the top of the list of concerns. Water conservation is a paramount consideration to assist the City in reducing the amount of water needed for augmentation that could require drying up surrounding agricultural land – an outcome the City is committed to avoiding. The two departments jointly compile the Water Efficiency Plan and are working together on a xeriscape demonstration garden. The City Council recently adopted outdoor watering restrictions that apply to all city residents, which will be enforced by a designated officer in the Police Department. City leaders intend to formalize the currently informal interaction to ensure that it continues beyond the tenure of the existing leadership.

- Alternatively, include land use and water integration in the responsibilities of an existing cross-department coordinating agency.
  Example: The City and County of Denver has an Office of Sustainability whose goals include water conservation. This Office acts as a conduit for connecting multiple departments within the city, including connecting Denver Water to the City's planning processes.

- The members of the planning team educate each other about the goals, opportunities, challenges, and anticipated projects of both the water provider and the planning department.

- Ensure that members of the planning team or coordinating agency are made aware of:

  - ***Water Provider Facts.*** Procedures used by the water provider to determine tap size and fees and for inspections prior to setting a new water meter, landscape and irrigation plan requirements, indoor and outdoor fixture standards, water use restrictions, monitoring of compliance with regulations, revenue stability issues associated with water conservation, infrastructure needs and plans, the impact of development on such needs, the water provider's ability to serve future growth and associated costs.

  - ***Planning Department Facts.*** Procedures used by the planning department to approve new development and encourage growth in particular areas, landscape and irrigation plan requirements, indoor and outdoor fixture standards and other building code requirements, procedures used to determine compliance with local governments' water adequacy requirements, growth projections in the water provider's service area, and the department's general development goals.

- Foster a better understanding between the water provider, the planning department, and the personnel involved in stormwater and wastewater planning to allow exploration of efficiencies gained through the use of low impact design.

- Explanatory materials and suggestions for the initial discussions between the water provider and the land use planners are included in Breaking Down Silos starting on p. 31.

- Do a self-assessment to understand where your community stands currently on water and land use integration. The Sonoran Institute has a self-assessment tool to help water providers and local governments get started in linking land use planning with water resource management. A video presentation provides an overview of the tool and shares examples of the tool in use.

b. Establish a procedure for regular meetings of the planning team and update all relevant information on a regular basis. Consider formalizing this procedure through a memorandum or directive to ensure that it continues when the original participants are no longer in the same positions.

c. Consider joint meetings among elected decision-makers of the land use authority and the water provider (City Council, County Commissioners, water district board of directors, water provider board). See Breaking Down Silos, p. 34; Coordinated Planning Guide: A How-To Resource for Integrating Alternative Water Supply and Land Use Planning, p. 8. Such meetings could be suggested and facilitated by the planning team.

   - Conduct initial discussions or provide briefings to inform decision-makers about actions proposed or taken to increase the integration of water conservation into land use planning.

   - Obtain feedback and direction from decision-makers on actions proposed; readjust and provide direction to staff if needed.

   - Consider a standing committee of elected decision-makers for briefings and joint decision-making when appropriate.

d. Consider participating in training or educational programs on incorporating water-saving actions into land use planning efforts. Technical assistance resources may also be available to participants in these programs.
Examples: The Growing Water Smart: Integrating Water and Land Use Planning Workshops, sponsored by the Sonoran Institute and the Babbitt Center for Land and Water Policy. This workshop introduces communities to the full range of communications, public engagement, planning, and policy implementation tools to better integrate land use and water planning and realize their watershed health and community resiliency goals. Many of the Colorado water suppliers and communities that have participated in this training credit it with helping them to increase collaboration between the water and land use professionals and in establishing improved procedures. At the time of writing, the Growing Water Smart training is funded for continuation through 2020.
Breaking Down Silos is an online educational and training module creating by Pace University's Land Use Law Center in collaboration with the Colorado Department of Local Affairs. It includes webinars and training materials on several land use and water integration topics and can prepare individuals to train others in their community on this topic.

e. Coordinate with other water providers and land use authorities in the region or within the same water basin. See Section 9 of the Ordinances and Regulations chapter of this Addendum for more information.

2. *Align Data and Information Used and Establish Coordinated Procedures*
Water providers can benefit from the population projections made by the land use authority and the projected development categories embodied in the comprehensive plan. The land use authority should understand the water demand implications of the comprehensive plan. Use of different growth and demand estimates by the water provider and the land use authority can lead to confusion, over- or under-building of water-related infrastructure, and, in extreme cases, to thwarted planning or litigation. See Coordinated Planning Guide, p. 8; Integrating Land Use and Water Resources: Planning to Support Water Supply Diversification, pp. 25-26.

    a. The Sonoran Institute's self-assessment tool can help entities determine where data aligns, and where data-sharing needs to occur. A video presentation provides an overview of the tool and shares examples of the tool in use.

    b. Align the population and growth projections of the water provider, the planning department, and other relevant authorities (special districts, counties, etc.). Align commercial development and other projections with water use implications. Address and resolve any inconsistencies.

    c. The water provider and planning department work together to utilize available tools for estimating water demand for proposed new development and comparing demand for different configurations of development.
    Examples: Several tools have been developed to assist in this type of analysis. See Colorado State University's Integrated Urban Water Model and Colorado Water and Growth Dialogue's Residential Land Use and Water Demand Tool.

    d. Measure and communicate water use and savings. Cooperate to determine and develop data that will help both water provider and the planning department. Data can be input for new development, with older records updated as time allows.
    Examples:
        - Water provider's accounts designate the applicable land use authority, class of customer (single family, multi-family, commercial, etc., using the same designations as the land use authority), year account created, property identifier.
        - Planning department attaches water supplier information to parcel designations. Population projections are broken down into water provider service areas.
        - Sorting capability is enabled for this type of information.

    See the 2012 Guidance, pp. 58-60, for more information on collecting and monitoring water savings data. Worksheets K and L provide a template for collecting demand data to track the effectiveness of water efficiency activities.

    e. Address monitoring for compliance with water use regulations and water-related development approval requirements, and enforcement of such requirements.

- Allocate responsibility for pre- and post-occupancy inspections as appropriate. Include inspections and enforcement of compliance with landscape plans, landscape maintenance standards, and water use regulations. See Integrating Water Efficiency into Land Use Planning in the Interior West: A Guidebook for Local Planners, Chapter O on post-occupancy enforcement.

- Water provider tracks actual water use and coordinates with land use authority to compare to pre-occupancy estimates. Advanced Metering Infrastructure (AMI) makes this type of compliance monitoring and forecast checking much easier and more feasible.

- Water provider develops, tracks, and refines metrics that link water use to land use. See Keystone Policy Center's 2018 Colorado Water and Growth Dialogue Report, p. 28.

- Require post-occupancy documentation to demonstrate that a project is operating as planned (not just constructed as planned).
  Example: As part of the approval of the Sterling Ranch development southwest of Denver, Douglas County required recording and delivery of water use data from new development for the purpose of evaluating the appropriateness of its water demand estimates. See Douglas County Commissioners Resolution No. R-13-080, pp. 16-19.

- Determine consequences of exceeding pre-occupancy estimates, water-related development approval conditions, or applicable water budgets, and allocate responsibility for follow-up. See Douglas County Commissioners Resolution No. R-13-080, pp. 15-16.

- Coordinate observations of water use violations with action by an enforcement authority. This may include coordinating enforcement between the water provider and land use authority, and, in some cases, the police power. Enforcement actions will vary depending on how water use is regulated. For example, a water use regulation that has been adopted into the land use code or development approval conditions may be enforced as a code violation, whereas a water use regulation adopted by the water provider may be enforced by fees on a water bill or other techniques available to the provider.

3. *Include Water Provider Representatives in Development Approval Process*
   In addition to the statutorily required referral process, in which the water provider is sent a copy of the development proposal and invited to comment,[3] water providers should be involved at an early stage of the development approval process, at a time and in a manner that enables them to make recommendations related to water conservation or efficiency that can influence the configuration of the proposed development.

[3] See Colo. Rev. Stat. §§ 29-20-301 to -305; 30-28-133(3)(d); 30-28-136.

a. Provide and formalize a means for meaningful participation by the water provider in pre-application meetings with developers and/or at specific points in the development review process, and in rezoning applications for land within the provider's service area, to provide information about anticipated water use of the proposed development and means of reducing both usage and cost (landscaping, lot size, fixtures, etc.). The type and configuration of water utility infrastructure necessary to serve a proposed development should be specifically addressed. Required infrastructure improvements and upgrades may be required miles away from the development due to constraints in pipes and treatment facilities. Developers should be made aware of these requirements at an early stage as costs can be significant and alternatives may be available.

b. Ensure that the configuration of proposed development for which a water service commitment has been made by the water provider is consistent with the final approved development plan (e.g., provide for update of water provider's service commitment before final approval of the development proposal by the governing body).
Example: Eagle County and Eagle River Water & Sanitation District (ERWSD) have a procedure in which the County requires a final Ability to Serve letter from ERWSD prior to final plat. Previously, ERWSD would provide a conditional capacity to serve letter to the developer at an early stage in the development approval process, and no further commitment was obtained even if the development proposal was changed. Now, the County requires developers to obtain a service commitment from ERWSD for the final development configuration prior to final plat approval.

c. Agree on the process and standards to be used by the land use authority for determining compliance with the adequate water supply requirements in the Colorado statutes. Land use authorities have significant discretion in determining water adequacy for new development and can utilize this discretion to emphasize conservation and water supply sustainability. It is encouraged that the water provider and land use authority require the incorporation of water conservation measures to ensure sustainability and resilience of the water supply and the ability to serve future growth as part of the adequacy determination.

Colo. Rev. Stat. § 29-20-303: *Applicants must satisfactorily demonstrate the adequacy of the proposed water supply in order to obtain development approval.*

Example: Town of Castle Rock Code 4.04.120 provides that if a developer prepares and uses a water efficiency plan, the Town may reduce its presumptive water use standards for tap connections.

d. Use development agreements to impose water conservation and verification requirements. See Section 4.b of the Ordinances and Regulations chapter of this Addendum for more information.

4. *Integrate Long Term Land Use and Water Planning*

   a. Integrate water conservation or demand management into the land use authority's comprehensive or master planning processes. Extensive information on this subject is available in the CWCB-sponsored training program on Integrating Water Efficiency into the Comprehensive Plan and associated webinar, and Incorporating Water into Comprehensive Plans in Colorado Communities. See also the Colorado Water and Growth Dialogue Research Report, March 2015, pp. 25-27.

      - Create a formal mechanism for input in long-range planning processes, both for the water provider during comprehensive or master planning by the planning department and for the planning department during water resources planning by the water provider. The water provider can provide information and data to the land use authority on the water supply and demand impacts of various development types being considered during the long-range planning processes.

      - Incorporate a water element into the comprehensive or master plan or strengthen the existing element. Add water policy in other plan elements as appropriate.

        - Evaluate the extent to which the comprehensive plan already addresses water. See Pace University's Land Use Leadership Alliance Questions to Guide Water and Land Use Planning Integration to help communities determine the level of water incorporation into their comprehensive plans.

        - Draft a water element for the comprehensive plan addressing conservation (complete with an introduction, goals, objectives, strategies, and implementation techniques). See Integrating Water Efficiency into Land Use Planning in the Interior West: A Guidebook for Local Planners, Chapter E, Section 2, on drafting water elements.

      - Review the comprehensive plan to identify other areas where water conservation, demand management, or water efficiency concepts could be incorporated.

      - Discuss the impact on water use and cost to customers of land use patterns such as increased density or infill development in appropriate areas in comparison to traditional suburban development.

      - Calculate a water use per acre for different zoning categories to facilitate the projection of future water use.

- Incorporate a One Water approach into planning, recognizing the interconnectedness of water supply, stormwater, and wastewater. See Keystone Policy Center's 2018 Colorado Water and Growth Dialogue Report, p. 26 and the American Planning Association's Planners and Water Report.

b. Discuss with the planning department opportunities for constraining costs to customers and reducing additional infrastructure extension needs through concentrating development within existing water service areas.

c. Integrate other planning efforts between the water provider and the planning department, such as Integrated Water Management Plans, Neighborhood Plans, Drought Mitigation Plans, Regional Watershed Plans, Stream Management Plans, Energy Plans, Sustainability Plans, etc. See Integrating Water Efficiency into Land Use Planning in the Interior West: A Guidebook for Local Planners, Chapter F, on incorporating water into sustainability plans.

TARGETED TECHNICAL ASSISTANCE AND INCENTIVES

This chapter addresses various types of incentive and assistance programs that can be considered and operated jointly by the land use authority and the water provider. Note that the 2012 Guidance (pp. 49-52) discusses in detail the types of incentives and assistance that may be offered by the water provider. The intent of this chapter is to address the types of techniques that require the cooperation of both entities.

Several of the techniques described in this chapter on assistance and incentives could alternatively be adopted by ordinance or regulation, could work in concert with or support ordinances or regulations, or could be imposed as a requirement rather than as an encouraged practice. Technical Assistance and Incentive programs can be used instead of regulations to encourage practices or to help developers and others comply with ordinances or regulations. Conversely, incentives may be unnecessary if ordinances or regulations require one or more of the techniques described below. The most appropriate means of implementing these programs will vary by community.

1. Work with the land use authority to provide developer incentives to reduce water demand in new development (e.g., fee guarantee for future building permits in the development, immediate credit in water development fees, payment of fee at issuance of certificate of occupancy as opposed to at time of construction permit, density bonuses, infill incentives, tap fee reduction program, priority inspections). See Verde Land and Water Toolbox and Integrating Water Efficiency into Land Use Planning in the Interior West: A Guidebook for Local Planners, Chapter N.

2. Encourage land development patterns that contribute to water efficiency and compact infrastructure. Note that increased density can lower per capita water demand but may increase total water demand for the project if more units are allowed. There may be limits to even the per capita water savings with very high-density development. See the Keystone

Policy Center's 2018 Colorado Water and Growth Dialogue Report, p. 9 for research from Arizona State University explaining how increased density can impact water demand.

a. Encourage increased residential density or compact, mixed-use development through developer incentives, such as density bonuses or infill incentives. See the Verde Land and Water Toolbox section on developer incentives.

b. Encourage cluster unit development. See Integrating Water Efficiency into the Zoning Code, pp. 4-9, for further explanation and examples.

c. Development offsets (e.g., reduced fees, increased credits, or preference in water allocation) in return for implementation of water efficiency measures. See the Verde Land and Water Toolbox section on development offsets.

3. Cooperate with the land use authority to define and encourage adoption of water-smart home options. Colorado requires developers to offer a water-smart home option and provides detailed criteria for qualification as "water-smart." See EPA's WaterSense Labeled Homes for more information and criteria for water-smart homes. Water-smart options are frequently paired with energy efficient features. See, for example, KB Homes eDifference program.

Colo. Rev. Stat. § 38-35.7-107(1)(a)
Builders of new single-family detached residences must offer the buyer the opportunity to select a water-smart home option.

4. Encourage developers to provide demonstration homes with low water use outdoor fixtures and landscapes. See Section 6 of the Ordinances and Regulations chapter of this Addendum for more information about landscape requirements.

5. Cooperate with the land use authority to develop and provide model landscape plans for new residential and large landscape developments. Such a plan could include any of the techniques listed as potential components of a landscape code in Section 6 of the Ordinances and Regulations chapter of this Addendum. Incentives or technical assistance could be provided to encourage adoption of the techniques in the model plan.

6. Encourage rainwater capture and use. Colorado has specific rules related to rainwater capture and water harvesting. See Colorado State University's fact sheet explaining the 2016 legislative changes to allow rainwater collection.

7. Incentives and assistance for reduced residential irrigation.
Example: The City of Fountain reduces its tap fee for residential lots that have limited the irrigated area to less than 50% or less than 30% of the total pervious area. The City has developed template landscape plans to help builders and contractors meet the requirements for the reduced fees.

ORDINANCES AND REGULATIONS

This chapter addresses municipal or county code provisions that might be adopted by the land use authority. The water provider should consider whether the ordinances and regulations described here would be helpful in achieving further water conservation and appropriate for the community and, therefore, should be discussed with the land use authority for consideration. To the extent that any of the provisions listed below or similar provisions have been adopted by the land use authority, they should be mentioned in the Water Efficiency Plan. Some of the ordinances and regulations described in this chapter may also be within the authority of the water provider and, therefore, may have already been considered in the Water Efficiency Plan. Because individual water providers vary greatly in terms of their legal authority to adopt regulations, multiple potential regulations are listed for consideration and evaluation.

Some of the techniques described could alternatively be implemented as incentive or technical assistance programs, if deemed appropriate by the water provider and land use authority. Water providers and land use authorities may want to consider providing incentives or technical assistance as a pilot program prior to passing a regulation or as an accompaniment to a regulation in order to assist with compliance.

1. Evaluate the zoning, subdivision, and development regulations of the land use authority to determine whether there are unintentional barriers to the adoption of water conservation or efficiency measures. If so, discuss appropriate modifications.

2. Discuss the adoption or strengthening of the following ordinances or regulations, and partner to educate and inform the public.

    a. Ordinance prohibiting water waste.
    Example: The City of Aurora is one of many land use authorities that has a specific ordinance prohibiting water waste.

    b. Watering or irrigation restrictions. Note that some restrictions may have already been adopted by the water provider, but these options can be considered also by the land use authority.

        - Time of day watering restrictions (e.g., no outside watering between 10am and 5pm).
        Example: The City of Cortez has adopted an ordinance establishing water use restrictions as a result of severe drought conditions. Exemptions can be obtained for new lawns.

        - Day of week watering restrictions (e.g., odd house numbers irrigate M-W-F, even house numbers irrigate T-Th-S; or limit to watering 3 days/week).
        Example: The City of Monte Vista passed a resolution allowing odd numbered addresses to water on Tuesday, Thursday, and Saturday, and even numbered addresses to water on Wednesday, Friday, and Sunday.

- Enable use of graywater and/or municipally supplied reclaimed water for nonpotable purposes, to the extent consistent with Colorado and local law. See Pitkin County and City and County of Denver enabling ordinances for graywater reuse.

- Adoption of criteria for water conservation against which new development proposals are assessed.
  Example: Any amendment to Westminster's land use plan must, among other requirements, not negatively impact water infrastructure or water supply (Westminster Municipal Code 11-5-21).

3. Incorporate water efficiency into zoning codes and rezoning procedures. Extensive information on this subject is available in the CWCB-sponsored training program on Integrating Water Efficiency into the Zoning Code and associated webinar.
   See Integrating Water Efficiency Into Land Use Planning in the Interior West Manual, Chapter G for a full overview of incorporating water into zoning codes and rezonings.

   a. Condition rezoning or discretionary reviews like Planned Unit Developments (PUDs) on low water use commitments.
      Example: Westminster uses a PUD process for all sites two acres or greater and thus almost all development approvals are the result of negotiation. Water conservation is a key consideration with the PUD formation particularly in regard to site design and landscaping. See Westminster's PUD and comprehensive plan amendment codes.
      Note that individual agreements or conditions may be unnecessary if ordinances or regulations require water conservation.

   b. Include water demands among the considerations for annexation.
      Example: Arapahoe County's 2018 Comprehensive Plan, p. 48, provides that the County will request a municipality annexing land to address the impacts on the water supply of the water provider (municipality or district), and that the County will encourage the use of renewable water supplies for annexations.

   c. Consider changing current zoning definitions, or rezone land, to allow for more varieties of multi-family and attached housing that decrease per capita water use. See Integrating Water Efficiency into the Comprehensive Plan**,** pp. 49-50.

   d. Consider designation of zoning categories that narrow the range of water use within the category, to allow for better forecasts of actual water use based on zoning. Coordinate with the planning department to develop water demands per zoning and/or land use category (i.e., how much water per household, per capita, or per acre would be consumed for varying development patterns, such as large-lot or small-lot single-family residential, multifamily residential, mixed-use, etc.). See Pace University's Land Use Leadership Alliance Questions to Guide Water and Land Use Planning Integration.
      Example: The City of Westminster is working to refine some of its zoning categories to better reflect expected water use. Zoning designations with a broad range of

potential uses, e.g., both retail stores and restaurants, make it difficult to project water demand.

e. Adopt an overlay zone or jurisdiction-wide development standard addressing water demand and conservation.
Example: Douglas County has a water supply overlay district encompassing the entire county, the purpose of which is to "ensure that development in all areas of Douglas County provides for a water supply that is sufficient in terms of quantity, quality, and dependability."

f. Designate a growth management area outside municipal boundaries that addresses water use. See Integrating Water Efficiency into the Comprehensive Plan, pp. 37-41.
Example: The City of Boulder has established growth boundaries and limited water service for development outside of these boundaries—see City of Boulder Charter, Article VIII, Section 128A.

4. Subdivision or site plan regulations that include water conservation.

a. Require the inclusion of water conservation and water demand management measures in the water supply report provided as part of any development permit application.

Colo. Rev. Stat. § 29-20-304
"An applicant for a development permit shall submit estimated water supply requirements for the proposed development." The statute does not mandate water conservation, but it could be required through ordinance or regulation.

b. Structure development or subdivision improvement agreements to include water conservation commitments.
Example: The Verde Land and Water Toolbox further explains how conditional zoning can include water conservation and provides an example from the Civano master planned community in Tucson, Arizona. *Note that individual agreements or conditions may be unnecessary if ordinances or regulations require water conservation.*

5. Implement requirements that contribute to water efficiency and compact infrastructure.

a. Water demand offset requirement, in which the projected water demand of new development is offset with water efficiency measures to create a neutral impact on overall service area demands and water use.
Example: The Alliance for Water Efficiency's Net Blue Ordinance Toolkit describes water demand offset requirements that have been adopted by communities across the country, together with various methodologies for calculating offsets, a model ordinance, and suggestions for community outreach.

b. Prioritize infill development. See Integrating Water Efficiency into the Comprehensive Plan, pp. 44-49, for further explanation and examples.

c. Adopt stormwater management policies to mitigate increased density or impervious surface area. See Integrating Water Efficiency into the Comprehensive Plan, pp. 50-53, for further explanation and examples.

6. Discuss the adoption, revision, or implementation of a water efficient landscape code or landscape design/installation rules or regulations. See Green Industry Best Management Practices (BMPs) for the Conservation and Protection of Water Resources in Colorado.
Example: Sterling Ranch has adopted water demand management rules and regulations that constitute its framework for "water-smart" development. See Amended Sterling Ranch Water Demand Initiatives, Section 3.5, pp. 4-20, and Attachment D.

   Any or all of the techniques listed below could alternatively be included in a model landscape plan with incentives and/or technical assistance as described in Section 5 of the Targeted Technical Assistance and Incentives chapter of this Addendum.

   a. Landscape code provisions for consideration could include:

      - Xeriscape requirements.

      - Turf limitations or minimums for low-water use vegetation for new development.
        See the Keystone Policy Center's 2018 Colorado Water and Growth Dialogue Report, p. 20, for research from the City of Aurora about landscape regulations generally; and the Landscape Reference Manual, p. 52, for the city's turf regulations.
        Example: The Town of Buena Vista limits the amount of high water use vegetation and turf grass for any new development. See Buena Vista Municipal Code, Section 16-255.

      - Soil amendment requirements.
        Example: Denver Water provides extensive information for compliance with its soil amendment requirements.

      - Rain/weather/soil moisture sensors requirements.
        See Douglas County Comprehensive Plan Policy 4-1 W.3, p. 4-10.

      - Outdoor efficient fixture requirements (e.g., must meet Green Building standards—see Section 7.a of the Ordinances and Regulations chapter of this Addendum for more information).

      - Low water use vegetation in open space or for areas used for stormwater or runoff control purposes.

      - Require use of plants from a native/drought-resistant plant list. The Colorado Native Plant Society has gardening guides applicable to five different regions in Colorado: Plains/Prairie, Front Range/Foothills, Southeastern Colorado,

Mountains above 7,500 feet, and Lower Elevation Western Slope.
Example: Castle Rock provides a Recommended Plant List.

- Prohibition of invasive, non-native, or high water use trees and shrubs.
Example: Commerce City maintains a list of prohibited trees and invasive species, together with its designation of approved species. See Approved Plant List pp. 3-4.

b. Require certification or registration of landscape professionals. The types of certifications that could be considered include:

- Qualified Water Efficient Landscaper certification. Individual landscapers can become certified through this program, and retail water agencies, non-government organizations, and educational institutions can adopt this program as a standard or requirement for landscapers in a region or service area. The City of Aspen offers certification for this program.

- Certified Irrigation Designer Certificate from the Irrigation Association.

- Landscape industry certified technician through the Associated Landscape Contractors of Colorado.

- Complete Green Industries of Colorado (GreenCo) best management practices program.

Example: The Town of Castle Rock requires landscape professionals, including designers, installers, and maintenance contractors performing commercial landscape and/or irrigation work within the Town Limits, to be registered and have one or more specified certifications.

c. Model landscape ordinances for consideration.

- The Colorado Department of Local Affairs has developed a model landscape ordinance utilizing a water conservation oriented planning approach.

- The South Metro Water Supply Authority has produced a Model Regional Water Efficient Landscape and Irrigation Ordinance for consideration and use by its thirteen water provider members.

- The State of California has a Model Water Efficient Landscape Ordinance that local agencies are required to adopt.

7. Building and plumbing codes that promote water efficiency, low water use, fixture improvements, or water benchmarking.

> ***Colo. Rev. Stat. § 6-7.5-102***
> *As of September 1, 2016, manufacturers are now required to sell only WaterSense labeled fixtures to distributors, wholesalers, retailers, developers and homebuilders in the State of Colorado.*

   a. Codify water efficiency standards set forth by green building codes (e.g., LEED guidelines for water conservation, national green building standards, Green Industries of Colorado (GreenCo) standards, Water Efficiency Rating Score (WERS), WaterSense labeled homes). The Alliance for Water Efficiency provides background on green building standards and guidelines with examples and comparisons of programs.
   Example: The City of Fort Collins and the City and County of Denver both require green building certification from LEED, Energy Star, or other applicable programs, for new city-owned buildings over 5,000 square feet. These programs include water efficiency measures for certification.

   b. Establish sustainable development bonuses for development that is green building certified.
   Example: The City of Pittsburgh provides Sustainable Development Bonuses for LEED-certified buildings, specifically mentioning the benefits that green buildings have for water quality and conservation in the ordinance.

8. Ordinances that promote efficient fixtures in existing buildings.

   a. Require retrofit on resale to include low water use fixtures.
   Example: Colorado WaterWise includes a section on retrofit ordinances in its Guidebook of Best Practices for Municipal Water Conservation in Colorado, pp. 162-64, and includes a California ordinance as an example in Appendix B, pp. 224-26.

   b. Require retrofit when new building permits are required to include low water use fixtures. Set a reasonable value threshold for triggering retrofit requirements.

9. Regional coordination among water providers for consistency of policy and procedure, and de-escalation of competition among jurisdictions for new development. Any of the following techniques can be enacted by a water provider and/or local government and, through collaboration with the appropriate entities, scaled up to the county or region.
   Example: The City of Fort Collins and surrounding water districts have formed a Regional Water Collaboration Steering Committee to identify and pursue regional water collaboration opportunities in and around the City's Growth Management Area.

   a. Consider making water conservation requirements consistent among land use authorities in the region.

   b. Consider uniform landscape code or irrigation regulations for the region. See Section 6 of the Ordinances and Regulations chapter of this Addendum for more information.

Case Study – Fort Collins-Loveland Water District

The District is one of many in the state serving more and more suburban customers on formerly rural land in quickly developing areas. New supplies from the Colorado-Big Thompson project, the District's primary existing source, are becoming more expensive and harder to obtain. Conservation is seen as an effective method of stretching supplies for the inevitable increased growth and development, driving down demand and saving existing customers money, but the District hesitates to impose water restrictions on its own. Because the District serves customers in two cities, two towns, and rural areas of Larimer County, regional cooperation is key to creating more uniform expectations among customers and developers and strengthening overall water management. The District is helping to draft water elements for the comprehensive plan updates of the City of Fort Collins and Larimer County. Regular meetings are beginning with other water providers in the region, and the District and Fort Collins cooperate to perform residential irrigation audits.

c. Consider uniform landscape and irrigation contractor certifications in the region. See Section 6.b of the Ordinances and Regulations chapter of this Addendum for more information.

d. Consider coordinating education and outreach across the region.
See Section 7 of the Education Activities chapter of this Addendum for more information.

e. Consider uniform promotion, incentives, or requirements for green building techniques. See Section 7.a of the Ordinances and Regulations chapter of this Addendum for more information.

EDUCATION ACTIVITIES

The activities described in this chapter are intended to be carried out collaboratively by the water provider and the land use authority to educate the public and/or development community about the water policies and regulations described throughout this Addendum. Coordination of education and outreach enables a unified message to water customers and developers about water use, preventing confusion or contradiction.

1. Ensure that information concerning water and water conservation on the respective websites of the water provider and the planning department is consistent and cross-linked. This helps water customers and users easily find the same information about water conservation and relevant policies and regulations.
Example: The Town of Eagle links to Eagle River Water and Sanitation District's policies and services on its water conservation page.

2. Water provider and planning department work together to:

    a. Provide public information and education on water conservation. This can be led by the water provider, in creating materials such as brochures that can easily be distributed to the land use authority for coordinated dissemination.
    Example: Cortez and Glenwood Springs each have water conservation brochures.

    b. Develop and disseminate landscape water budgets and information.
    Example: Greeley has water budgets, as do Centennial Water and Sanitation District, City of Boulder, and City of Castle Rock (as described in the Guidebook of Best Practices for Municipal Water Conservation in Colorado, pp. 105-107).

    c. Develop and provide landscape efficiency evaluations, irrigation audits, and green building codes. See Section 7.a of the Ordinances and Regulations chapter of this Addendum for more information.
    Examples: The Eagle River Water and Sanitation District provides information on how to perform an outdoor water audit. Fort Collins supplies a free sprinkler audit kit to water customers in the area. Greeley will perform a free indoor or irrigation audit upon request.

    d. Hold public meetings for input on water policy in the comprehensive or master plan. Public meetings are a staple of the comprehensive or master planning process; thus, if water is included within the comprehensive or master plan, feedback will naturally be collected on water policy. Representatives from the water provider should attend these meetings in order to hear feedback and adjust accordingly.

    e. Conduct a public survey or survey of developers on which land use mechanisms for water conservation respondents would most like to see implemented. See Development Community Perspectives on Water Efficiency in New Construction.

    f. Provide information on which approaches most effectively conserve water so that developers and planners can make informed decisions. See Section 2.d of the Foundational Activities chapter of this Addendum for more information.

3. Target buildings and facilities owned by the water provider and land use authority for water efficiency improvements to provide education and lead by example. See Keystone Policy Center's 2018 Colorado Water and Growth Dialogue Report, pp. 29; LEED credits for water efficiency; and EPA WaterSense's Best Management Practices for Commercial and Institutional Facilities.

    a. Measure and communicate water savings of the building.
    Example: EPA's Energy Star program includes water benchmarking in buildings. An Energy Star communications toolkit has strategies for sharing energy and water efficiency gains with the public.

    b. Give tours and/or provide educational materials for interested customers and citizens.

4. Jointly engage with the development community. The planning department and water provider can provide information to potential developers about water rates and fees, development incentives, potential for cost savings, water conservation techniques, incentives, and requirements, and ensure that any concerns are understood and/or addressed.

5. Water provider and planning department work together to communicate the benefits of water conservation to the community. Different communities will have unique values based on their particular circumstances. Benefits from water conservation cited by Colorado communities include:

    a. Allows service to additional growth if water supplies are limited
    b. Services more customers without increasing costs
    c. Reduces the need to "buy and dry" agricultural land and retains more agricultural land to preserve historic heritage, scenic qualities, and food production
    d. Mitigates drought impacts and increases drought resilience
    e. Eliminates or delays need for additional water infrastructure and associated costs
    f. Eliminates or reduces the need to acquire additional water rights
    g. Increases water system reliability, stability, and resiliency
    h. Reduces costs to customers
    i. Reduces water and wastewater treatment needs and effluent discharge
    j. Reduces surface water runoff during irrigation season
    k. Reduces the amount of water diverted from rivers and streams, maintaining instream flows
    l. Reduced water demand means reduced energy demand and greenhouse gas emissions
    m. Demonstrates a commitment to the sustainability of the community and leadership in proper stewardship of a public resource

    More benefits that can result from coordinated planning are described on p. 3 of the Coordinated Planning Guide.

6. Share success stories and case studies with other communities and the public.
    See Keystone Policy Center's 2018 Colorado Water and Growth Dialogue Report, pp. 28.

7. Coordinate education and outreach across the region.
    Example: One of the goals of the Northwest Colorado Council of Governments Water Quality/Quantity Committee is to educate its member communities about water quality/quantity issues facing the region in order to promote regional solutions and sound water management. This effort has included tours of watersheds and data sharing.

Appendix A: References

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APPENDIX B: WORKSHEETS TO GUIDE SELECTION PROCESS

WORKSHEET D – IDENTIFICATION AND SCREENING OF FOUNDATIONAL ACTIVITIES

Water Efficiency Activities for Screening [1]	State Statute Requirement [2]	Identification		Qualitative Screening [5]					Carry to Evaluation [6]	Reason for Elimination [7]
		Existing/ Potential Activity [3]	Targeted Customer Category [4]	*Enter screening criteria*	*Enter screening criteria*	*Enter screening criteria*	*Add additional screening criteria*	Notes on Additional Pros/Cons to Consider		
Metering (BP1)	V, VII									
Automatic Meter Reading Installation and Operations										
Submetering for Large Users (Indoor and Outdoor)										
Meter Testing and Replacement										
Meter Upgrades										
Identify Unmetered/Unbilled Treated Water Uses										
Add additional activities										
Data Collection - Monitoring and Verification (BP2)										
Frequency of Meter Reading										
Tracking Water Use by Customer Type										
Upgrade Billing System to Track Use by Sufficient Customer Types										
Tracking Water Use for Large Customers										
Area of Irrigated Lands in Service Area (e.g. acres)										
Add additional activities										
Water Use Efficiency Oriented Rates and Tap Fees (BP1)	VII, VIII									
Volumetric Billing										
Water Rate Adjustments										
Frequency of Billing										
Inclining/Tiered Rates										
Water Budgets										
Tap Fees with Water Use Efficiency Incentives										
Add additional activities										
System Water Loss Management and Control (BP3)	V									
System Wide Water Audits										
Control of Apparent Losses (with Metering)										
Leak Detection and Repair										
Water Line Replacement Program										
Add additional activities										
Planning (BP2)										
Integrated Water Resources Plans										
Master Plans/Water Supply Plans										
Capital Improvement Plans										
Feasibility Studies										
Add additional activities										
Staff (BP4)										
Water Conservation Coordinator										
Add additional activities										
Integration of Land Use Planning Efforts	IV(f)(i)									
Establish Regular Contact and Information Sharing										
Align Data and Establish Coordinated Procedures										
Water Provider Participates in Development Approval										
Integrate Long Term Land Use and Water Planning										
Add additional activities										

Instructions:
[1] This column provides a list of possible activities & identifies the Best Practice activity as defined in the *Colorado WaterWise Guidebook of Best Practices (BP) for Municipal Water Conservation in Colorado* and in *Land Use Best Practices – WEP Guidance Addendum*. List additional activities identified through the planning process.
[2] This column identifies, by roman numeral, the elements that correspond with the best practices and that shall be fully considered in the planning process per Colorado State Statute 37-60-126.
[3] Specify whether the activity is "Existing" or a "Potential" activity to carry through screening by entering an "E" or "P", respectively.
[4] As applicable, specify which customer category (residential, commercial, etc.) is/would be impacted by the activity.
[5] Enter screening criteria based on qualitative goals developed in Step 3 and insert an "X" for activities that meet the listed screening criteria.
[6] Based on the screening process, indicate which activities will be carried onto the evaluation phase with an "X".
[7] If eliminated via screening, comment on why.

WORKSHEET E – IDENTIFICATION AND SCREENING OF TARGETED TECHNICAL ASSISTANCE AND INCENTIVES

Water Efficiency Activities for Screening [1]	State Statute Requirement [2]	Identification						Qualitative Screening [6]					Carry to Evaluation [7]	Reason for Elimination [8]
		Existing/ Potential Activity [3]	SWSI Framework Levels [4]			Targeted Customer Category [5]								
			Level 1 Municipal Uses	Level 2 Customers with the ...	Level 3 Customer Type(s) in Service Area			*Enter screening criteria*	*Enter screening criteria*	*Enter screening criteria*	*Add additional screening*	Notes on Additional Pros/Cons to		
Installation of Water Efficient Fixtures and Appliances	I													
Indoor Audits														
Toilet Retrofits														
Urinal Retrofits														
Showerhead Retrofits														
Faucet Retrofits (e.g. aerator installation)														
Water Efficient Washing Machines														
Water Efficient Dishwashers														
Efficient Swamp Cooler and Air Conditioning Use														
Add additional activities														
Low Water Use Landscapes	II													
Drought Resistant Vegetation														
Removal of Phreatophytes														
Irrigation Efficiency Evaluations/Outdoor Water Audits														
Outdoor Irrigation Controllers														
Irrigation Scheduling/Timing														
Rain Sensors														
Residential Outdoor Meter Installations														
Xeriscape														
Other Low Water Use Landscapes														
Irrigation Equipment Retrofits														
Add additional activities														
Water- Efficient Industrial and Commercial Water-Using Processes	III													
Specialized Nonresidential Surveys, Audits and Equipment Efficiency Improvements														
Commercial Indoor Fixture and Appliance Rebates/Retrofits														
Cooling Equipment Efficiency														
Restaurant equipment														
Add additional activities														
Incentives	X													
Toilet Rebates														
Urinal Rebates														
Showerhead Rebates														
Water Efficient Faucet or Aerator Rebates														
Water Efficient Washing Machine Rebates														
Water Efficient Dishwasher Rebates														
Efficient Irrigation Equipment Rebates														
Landscape Water Budgets Information and Customer Feedback														
Turf Replacement Programs/Xeriscape Incentives														
Give-aways														
Add additional activities														
Integration of Land Use Planning Efforts	IV(f)(i)													
Provide Developer Incentives to Reduce Demand														
Encourage Water Efficient Land Development Patterns														
Collaborate to Adopt Water Smart Home Options														
Low Water Use Demonstration Homes														
Provide Model Landscape Plans														
Encourage Rainwater Capture and Use														
Incentivize Reduced Residential Irrigation														
Add additional activities														

Instructions:
[1] This column provides a list of activities & if applicable, identifies the Best Practice activity as defined under *Colorado WaterWise Guidebook of Best Practices (BP) for Municipal Water Conservation in Colorado* and in *Land Use Best Practices – WEP Guidance Addendum*. List additional activities identified through the planning process.
[2] This column identifies, by roman numeral, the elements that correspond with the best practices and that shall be fully considered in the planning process per Colorado State Statute 37-60-126.
[3] Specify whether the activity is an "Existing" or "Potential" activity to carry through screening by entering an "E" or "P", respectively.
[4] Specify which level the historical/potential activities fall under by entering an "X" in the appropriate column.
[5] As applicable, specify which customer category (residential, commercial, etc.) is/would be impacted by the activity.
[6] Enter screening criteria based on qualitative goals developed in Step 3 and insert an "X" for activities that meet the listed screening criteria.
[7] Based on the screening process, indicate which activities will be carried on the evaluation phase with an "X".
[8] If eliminated via screening, comment on why.

WORKSHEET F – IDENTIFICATION AND SCREENING OF ORDINANCES AND REGULATIONS

Water Efficiency Activities for Screening [1]	State Statute Requirement [2]	Identification					Qualitative Screening [6]					Carry to Evaluation [7]	Reason for Elimination [8]
		Existing/ Potential Activity [3]	SWSI Framework Levels [4]			Targeted Customer Category [5]	*Enter screening criteria*	*Enter screening criteria*	*Enter screening criteria*	*Add additional screening criteria*	Notes on Additional Pros/Cons to		
			Level 1 Customer Type(s) within the Existing	Level 2 New Development	Level 3 Point of Sales on Existing Building Stock								
General Water Use Regulations	IX												
Water Waste Ordinance (BP 5)													
Time of Day Watering Restriction													
Day of Week Watering Restriction													
Water Overspray Limitations													
Add additional activities													
Landscape Design/Installation Rules and Regulations	IX												
Rules and Regulations for Landscape Design/Installation (BP 9)													
Landscaper Training and Certification (BP 8)													
Irrigation System Installer Training and Certification (BP 8)													
Soil Amendment Requirements (BP 9)													
Turf Restrictions (BP 9)													
Irrigation Equipment Requirements													
Outdoor Water Audits/Irrigation Efficiency Regulations (BP 10)													
Outdoor Green Building Construction (BP 8,9)													
Add additional activities													
Indoor and Commercial Regulations	IX												
High Efficiency Fixture and Appliance Replacement (BP 12)													
Commercial Cooling and Process Water Requirements (BP 14)													
Green Building Construction (BP 12)													
Indoor Plumbing Requirements (BP 12)													
City Facility Requirements (BP 12)													
Required Indoor Residential Audits (BP 13)													
Required Indoor Commercial Audits (BP 14)													
Commercial Water Wise Use Regulations (Car Washes, Restaurants, etc.)													
Add additional activities													
Integration of Land Use Planning Efforts	IV(f)(i)												
Evaluate Unintentional Barriers to Water Conservation													
Adopt or Strengthen Water Conservation Ordinances													
Zoning Code Reform													
Subdivision Regulation Reform													
Require Water Efficiency and Compact Infrastructure													
Adopt or Strengthen Landscape Regulations													
Building and Plumbing Code Reform													
Retrofit Requirements for Existing Buildings													
Regional Coordination													
Add additional activities													

Instructions:
[1] This column provides a list of activities & if applicable, identifies the Best Practice activity as defined under *Colorado WaterWise Guidebook of Best Practices (BP) for Municipal Water Conservation in Colorado* and in *Land Use Best Practices – WEP Guidance Addendum*. List additional activities identified through the planning process.
[2] This column identifies, by roman numeral, the elements that correspond with the best practices and that shall be fully considered in the planning process per Colorado State Statute 37-60-126.
[3] Specify whether the activity is an "Existing" or "Potential" activity to carry through screening by entering an "E" or "P", respectively.
[4] For current/historical activities, specify which level the activities fall under by entering an "X" in the appropriate column.
[5] As applicable, specify which customer category (residential, commercial, etc.) is/would be impacted by the activity.
[6] Enter screening criteria based on qualitative goals developed in Step 3 and insert an "X" for activities that meet the listed screening criteria.
[7] Based on the screening process, indicate which activities will be carried on the evaluation phase with an "X".
[8] If eliminated via screening, comment on why.

WORKSHEET G – IDENTIFICATION AND SCREENING OF EDUCATION ACTIVITIES

Water Efficiency Activities for Screening [1]	State Statute Requirement [2]	Identification					Qualitative Screening [6]					Carry to Evaluation [7]	Reason for Elimination [8]
		Existing/ Potential Activity [3]	SWSI Framework Levels [4]			Targeted Customer Category [5]	*Enter screening criteria*	*Enter screening criteria*	*Enter screening criteria*	*Add additional screening criteria*	Notes on Additional Pros/Cons to		
			Level 1 One-Way	Level 2 One-Way with Feedback	Level 3 Two-way communication								
Customer Education (BP6)	VI												
Bill Stuffers													
Newsletter													
Newspaper Articles													
Mass Mailings													
Web Pages													
Water Fairs													
K-12 Teacher and Classroom Education Programs													
Message Development/Campaign													
Interactive Websites													
Social Networking (e.g., Facebook)													
Customer Surveys													
Focus Groups													
Citizen Advisory Boards													
Add additional activities													
Technical Assistance	VI												
Customer Water Use Workshops													
Landscape Design and Maintenance Workshops													
Xeriscape Demonstration Garden													
Water Conservation Expert Available													
Add additional activities													
Integration of Land Use Planning Efforts	IV(f)(i)												
Cross-Link Water Information Online													
Work Together on Public Information and Outreach													
Use Public Facilities as Demonstration Projects													
Jointly Engage with Development Community													
Work Together to Communicate Benefits of Conservation													
Share Case Studies of Success with Others													
Coordinate Education and Outreach Across the Region													
Add additional activities													

Instructions:
[1] This column provides a list of activities & if applicable, identifies the Best Practice activity as defined under *Colorado WaterWise Guidebook of Best Practices (BP) for Municipal Water Conservation in Colorado* and in *Land Use Best Practices – WEP Guidance Addendum*. List additional activities identified through the planning process.
[2] This column identifies, by roman numeral, the elements that correspond with the best practices and that shall be fully considered in the planning process per Colorado State Statute 37-60-126.
[3] Specify whether the activity is an "Existing" or "Potential" activity to carry through screening by entering an "E" or "P", respectively.
[4] For current/historical activities, specify which level the activities fall under by entering an "X" in the appropriate column.
[5] As applicable, specify which customer category (residential, commercial, etc.) is/would be impacted by the activity.
[6] Enter screening criteria based on qualitative goals developed in Step 3 and insert an "X" for activities that meet the listed screening criteria.
[7] Based on the screening process, indicate which activities will be carried on the evaluation phase with an "X".
[8] If eliminated via screening, comment on why.

TASK 4

BABBITT CENTER
FOR LAND AND WATER POLICY
A Center of the Lincoln Institute of Land Policy

GETCHES WILKINSON CENTER
FOR NATURAL RESOURCES, ENERGY, AND THE ENVIRONMENT

Implementing Water Conservation through Land Use Planning Efforts
Review of Draft New Guidance for Water Efficiency Plans

October 24, 2018
10:00 am – 2:30 pm
Summit County Commons – Mount Royal Room
37 Peak One Drive
Frisco, CO

Workshop Goals

- Provide feedback on the value and content of the draft guidance addendum
- Identify how the Colorado Water Conservation Board can support water providers with building capacity for implementation of the land use planning efforts identified in Water Efficiency Plans

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10:00 Welcome & Introduction

Anne Castle, Senior Fellow with the Getches-Wilkinson Center, University of Colorado, *will welcome participants and lead introductions.* ***Marjo Curgus****, the workshop facilitator, will review the agenda and goals for the day.*

10:15 New Guidance Overview

The effort to use our water as efficiently as possible and integrate water conservation with land use planning are goals of Colorado's Water Plan. This guidance addendum will be one of the first tools made available specifically to water providers

- ***Ellen Roberts, former President Pro Tem of the Colorado Senate****, will share her intent and expectations in championing Senate Bill 2015-008 and the goal of adding land use to the existing Water Efficiency Plan requirements.*
- ***Kevin Reidy, Water Conservation Specialist for the Colorado Water Conservation Board****, will review how the new WEP Addendum relates to the State Water Plan, why this Addendum is needed, and its relationship to the existing 2012 Guidance.*
- ***Anne Castle*** *will discuss the process through which the new guidance was developed.*

10:50 The Guidance Addendum Addressing Land Use Planning and How To Use It

***Erin Rugland, Research Fellow at the Babbitt Center for Land and Water Policy**, will review the structure and content of the Water Efficiency Plan draft guidance on incorporating land use efforts. The guidance addendum is organized in the same chapters as the existing 2012 guidance:*

- *Foundational Activities*
- *Targeted Technical Assistance and Incentives*
- *Ordinances and Regulations*
- *Education Activities*

11:10 Feedback Session #1: The Value of the Land Use and Water Conservation Guidance Addendum

Traditionally, water providers have planned for efficiency and conservation after occupancy of buildings using tools such as education, rates, and incentives. This draft guidance marks a shift to integrating water conservation into decisions about how development occurs. In this session, we will explore how well this guidance will help water providers achieve their goals for water conservation and efficiency.

- *Overall, will this guidance be useful in creating a Water Efficiency Plan?*
- *Given that land use authority rests with local governments, what are the pathways available to you to include land use in your Water Efficiency Plan?*
- *How do you think this will help and how might you use it?*

A few minutes will be provided for review of the document prior to the discussion.

12:00 LUNCH will be provided onsite

12:30 Feedback Session #2: Review of the Strategy Recommendations

In this session, we will break into small discussion groups to review each of the four addendum chapters. Each of these chapters provides information about strategies, case studies, resources, and more. We will review how the content is presented and its utility.

- *Is it easy to read? Would anything make it more readable?*
- *Is the content presented clearly? Was anything unclear or confusing?*
- *Is the content substantive enough to inform your plan development?*
- *Is anything missing that should be included?*

1:30 Feedback Session #3: Review of the Worksheet and Evaluation Criteria

A commonly-asked question is what land use actions will provide the biggest bang for the buck in terms of water savings. The Worksheets are intended to provide you with a way to identify the best strategies for your WEP. In this session, we will discuss how you might select from the strategies presented.

- *What are the criteria you currently use to evaluate potential strategies and tactics in your Water Efficiency Plan?*
- *Are these criteria appropriate for land use strategies or is there a need to develop new ones?*
- *Are the examples provided helpful? Are additional examples needed?*

2:05 Looking Forward

***Marjo Curgus** will summarize the key outcomes of the discussion followed by a discussion about how the CWCB might provide support to water providers for implementation.*

2:20 Wrap Up & Next Steps

***Anne Castle** and **Erin Rugland** will summarize how the draft guidance addendum will be finalized.*

2:30 END

Summary Recommendations and Feedback

From Workshop on Oct. 24, 2018

Draft New Guidance for Consideration by the CWCB

Implementing Water Conservation through Land Use Planning Efforts

A. Structural Recommendations

Recommendations for structural improvements were categorized under the following themes:

- Fonts
- Language
- Design & Layout
- Weblinks
- Case Studies

1. Fonts

- Make all fonts consistent throughout (e.g. use a san serif font)

2. Language

- Review for jargon and simplify
- Reinforce Water Sense where possible to reinforce branding
- Create a glossary of terms and acronyms
- Starting with action verbs good, but "consider" too weak

3. Design & Layout

- General
    - Utilize highlighting or bold to bring attention to key points, especially in long lists
    - Change bullet points to numbers under lower sub-bullets to make it easier to reference
    - The narrative format is long and a bit dry, utilize design to make it more visually interesting and easier to read.
        - Use diagrams, pictures, and other visuals where possible.
        - This is especially important in education section.
    - Make examples stand out like in text boxes. Use paragraphs and spacing to break up text.
    - Ensure readability and visibility of color scheme: purple and orange for text boxes not liked
    - Use icons for various types of water use and impact: ie indoor water use, outdoor water use, residential, mixed use, commercial, etc.
- Use Table of Contents
    - Create a mini table of contents for each section
    - Put more information in main Table of Contents to make it easier to find information
    - Too many all CAPS in TOC and create more space
- Pagination

    - Chapter headings are getting lost
    - Number chapters
    - New page for each chapter
    - Put all introduction (scope, background, incorporating, using the template, etc.) into one chapter
- Checklist
    - Add more space in the checklist
    - Guidance on how to use the checklist or rename it and take out check column
    - Use icons or infographics to indicate potential water savings/impact

4. Web Links

- Ensure long term maintenance so remain useful (e.g. review annually)
- Provide a brief bulleted explanation about link content
- May need to create footnotes for each link, particularly for print version (Source, explanation) if it gets too distracting in layout.

B. Content Recommendations

Recommendations for content improvements were categorized under the following themes:

- Purpose and Benefit of Linking Water and Land Use
- Communication and Outreach
- Linkages to Affordable Housing
- Identifying & Selecting Strategies with the Biggest Bang for the Buck
- Understanding Water Demand
- Linking to Sustainability
- Specific Section Content
- Case Studies

1. Purpose and Benefit of Linking Water and Land Use

- There should be a short introduction in simple language that explains why this is important and in a language communicable to a wide range of audiences.
- Show value to political leaders – how this affects costs, impacts, infrastructure, bottom line
- Use Growing Water Smart Resource Guide for higher level audience

2. Groups who Should Be Added for Outreach

- HOAs
- Developers
- Include example of government outreach to lower income/Spanish speaking involvement

3. Linkages to Affordable Housing

- Clarify or demonstrate how affordable housing will not be impacted by the potential increase in costs of water efficiency to developer. (e.g. reduced water acquisition requirement)
- Link to public benefit or public money expenditures

4. Understanding Community/Customer water demand

- Make the studies about the amount of water per unit area based on type of land use more prominent.
    - E.G. Clarion, Colorado Water and Growth Dialogue
    - Aurora and Denver

5. Linking to Sustainability

- How to integrate into green building development (build it right from the start)
    - LEED or ICCC green plumbing code.
    - Outreach to green builders and development community to educate/understand the value of water wise investments
    - How to educate the development community about water regulations
- Include certifications and/or criteria
    - Review STAR Communities indicators, LEED indicators, Audubon Certification

6. Specific Section Content Recommendations

- General:
    - Include context on what can do if have combined water/land use authority (e.g. municipality and utility) and what can do if have to collaborate between agencies (e.g. municipality and water districts)
    - Include target audience in the introduction
    - Include a map that demonstrates where all the examples are located to demonstrate statewide applicability
- Targeted Technical Assistance and Incentives
    - #7: PACE guidebook reference and WRA reference
    - Consider municipality joining Water Sense as a partner
    - Can more be presented on tap fees without duplicating 2012 guidance? Huge opportunity. Trying to figure out how to incentivize development types like mixed use.
- Foundational Activities
    - Despite introduction saying not applicable to all, this section applicable to all
    - Reiterate importance of focusing on this first
    - Could use more specific actions
    - Create a process flow diagram and/or checklist on how to get started
    - How to maintain relationships
        - Eagle County and ERWSD: meet quarterly between planning and utility department
        - Westminster planners and utility meet weekly depending upon development level
    - More how to on relationship building with water providers
    - Talking points or process for first meeting between planners and providers
    - Mywatersflouride from CDC shows all water providers in each county https://nccd.cdc.gov/doh_mwf/default.aspx
    - pp. 9-10, may be able to eliminate some duplicative discussion
- Ordinances & Regulations

  - Recommend AICP or LEED certification for staff
  - Standardize across a region creates a foundation for statewide adoption
    - State has model landscape ordinance
  - How to enforce codes?
  - Outdoor watering generally the biggest bang for buck
  - More on post-occupancy enforcement. A lot in WRA manual to link to.
  - Differentiate redevelopment and new development opportunities
  - Require staff to be certified to review plans and have fees to cover
  - Not enough clarity on how to choose (see prioritization)

- Education Activities
  - Northern Water example for landscaper certification
  - Combine #2 and #5
  - Peak Spatial Tool that helps homebuyers assess their water situation and conservation activities when buying new

7. Case Studies

- Include a case study in every chapter or links to additional case studies
- Examples of integrating water and sustainability, an important value in many communities.
  - Communities that have adopted LEED or ICCC green plumbing code.
- Examples of developers who have adopted water conservation (Sterling Ranch, Durango, New Mexico and Santa Fe Green Builders)
- Examples of communities who have successful methodology for calculating peak water demand and using density per acre/water demand per development type (Westminster, Denver, Aurora)
- Add Ft Collins water waste example – Eric Olsen
- EWRSD/Eagle County best practices (PUD and water budgets, landscaping requirements with agreement to supply water/land use approval)

C. Evaluation Criteria

1. Identifying & Selecting Strategies with the Biggest Bang for the Buck

- In addition to the criteria, prioritize or rank the checklist of tools from most impactful to least impactful.
- If possible, provide links or summary of each strategy's potential water and costs savings.
- At beginning of Sections, include the top three strategies at beginning.
- Add how different strategies achieve different goals and benefits of certain strategies

2. Worksheets

- Explain the limits of measurement for land use related strategies, explain they are hard to quantify
- Also explain land use is interrelated to other policies and thus also impacted by transportation, wastewater, water quality & watershed health, etc.
- 2012 Guidance provides the reference for how to develop criteria and assess strategies, maybe make that more explicit in this new guidance.

- In a discussion of criteria, the group reviewed existing criteria and discussed what else they currently use or may need to consider in evaluating conservation strategies.

2012 Guidance Suggested Criteria	Discussion for New Guidance: Related to Existing Criteria	Discussion for New Guidance: Land Use Policy Specific

• Beneficial from a political perspective
• High public acceptance
• Implementable from a staff/resource perspective from initial qualitative overview
• Technically feasible from initial qualitative overview
• Likely to be adopted at a regulatory level (no legal constraints/issues)
• High likelihood of success
• Economic viability/cost effectiveness/cost benefit
• Sufficiently reflects goals
• Collectively meet water saving targets
• Implementation costs (budget and time) are feasible
• Targets appropriate customer categories
• Activities are complementary
	• High public acceptance (to targeted stakeholders)
	• Implementable with staff and resources (time, money, dollars, willingness)
	• Targets appropriate customers/water use/customer category
	• Has potential as a demonstration project
	• Positive cost to benefit analysis
	• Demonstrated success or best practice
	• Is a priority goal or strategy identified by customers feedback
		• Agreement to collaborate
		• Timeliness or opportunity (e.g. external environmental conditions like drought, community awareness of issues, etc.)
		• Market support or feasibility
		  o Developer led water efficient plan
		• Incentives versus Mandatory
		• Expands on what already doing in code
		• Politically implementable
		  o Leadership understanding and support (readiness)
		  o Necessary collaborative support

D. General Recommendations to CWCB

- Expand resource to be available to other stakeholders including:
  - The development community (and benefit in savings of water efficient development)
- Develop professional development certifications that can be beneficial in hiring practices/building capacity. Offer through various organizations.
  - AICP, LEED, water efficiency, etc.
- Create a decision making tool for choosing among various practices
- Develop a peer learning network
  - Facilitate ongoing dialogue
- Regularly update the document
- Provide financial and staff resources

E. Challenges with Implementation

- Methodologies for calculating water demand
    - There are limitation on calculating demand using only population projections. This should be a caveat.
    - Calculating peak population and peak water demand is challenging, especially in tourist communities (best practice is water and sanitation flows and taking out irrigation)

F. Potential Additional Uses

- Inform long range planning (comprehensive plans, sustainability and resiliency plans)

G. Summary Scale Rating

Feedback Session One		
Value of the Guidance		**Mean**
Q1: How useful will this resource be in creating a WEP?		
	Pink	4.33
	Green	4.00
	Orange	3.70
		4.01
Feedback Session Two		
Strategy Recommendations		
Q4: How easy is this to read?		
	Pink	4.21
	Green	3.67
	Orange	3.50
		3.79
Q5: How clearly is the information presented?		
	Pink	4.17
	Green	4.00
	Orange	4.00
		4.06
Q6: Is the information substantive enough?		
	Pink	4.50
	Green	4.17
	Orange	4.50
		4.39

ALL RECORDER NOTES

Karen Widomski from Thornton was the discussion leader. Anne Castle was the recorder.

Feedback Session One: The Value of the Best Practices Guidance

Question 1: Overall, will this guidance be useful in creating a Water Efficiency Plan?

Katie, Fountain: Would have been amazing to have this guidance when they were doing their WEP.

Drew, Westminster: It's really comprehensive. This is a lot. Where should I start? Maybe have a ranking of strategies based on their impact.

Jessie, Breckenridge: They hired Brendle Group to do their WEP. Now they have a working group to implement. Possible organizational breakdown – if you have land use authority, here are the 5 things you could do. If you don't have land use authority, here are the other 5 things you could do. Otherwise, information overload.

Kris, Eagle County: This would be very nice to have in order to give it to the new metro districts that are always springing up in the county.

Rocky, UCD: This is a rich resource, designed for practitioners, a technical document. Describe who the audience is in the introductory materials.

Lindsay, WaterNow Alliance: Address political feasibility. Incentives are always easier politically than mandates.

Kris, Eagle County: Include case studies that describe how political barriers were overcome.

Drew, Westminster: Include case studies in every section, or include links to additional case studies. Also, the guidance says one size doesn't fit all, but the Foundational Activities section should be for everyone. Include direction to focus on these first.

General discussion on how to prioritize:

Eagle County – strategies addressing outdoor use give the biggest bang for the buck. Also water budgets

Maybe include Eagle River WSD/Eagle County case study – 2 recent PUD amendments in which ERWSD worked with CSU extension service to set a water budget.

Also required particular types of vegetation. Eagle County adopted this budget and the vegetation list as part of the land use approval, providing more enforcement potential.

Could include links to Water Efficiency Plans that do a good job with land use planning.

Question 2: Given that land use authority rests with local governments, what are the pathways available to you to include land use in your Water Efficiency Plan?

Eagle County and ERWSD meet on a quarterly basis. This is how they discovered that a developer had provided different water plans to the District and to the County.

Drew, Westminster: Westy has weekly meetings of staff in the water utility and planning department. The frequency of meetings should be based on the pace and numbers of development proposals.

Jessie, Breckenridge: Use the International Building Code to revamp other procedures.

Kris, Eagle County: Tie water conservation to wildland fire mitigation – lots of attention on this issue right now. Include a case study?

Micah, ERWSD: Points out that when Eagle County was under fire restrictions and had a nearby fire going, someone directed homeowners to "soak their lawns" to fend off fire. Conflict.

Kris, Eagle County: Pathways - if ERWSD can't serve, then the development proposal doesn't get a hearing, doesn't proceed at all.

Micah, ERWSD: We'll serve what's approved, but would like to make sure it's water efficient.

Drew, Westminster: Concerned with attitude of many water districts – we'll serve whatever is approved in our service area. Ask no further questions.

Rocky, UCD: Should encourage dialogue, maybe need soft requirements if encouragement doesn't work.

Micah, ERWSD: Pathways – dialogue, education

Kris, Eagle County: Planners have other competing goals, including affordable housing.

Question 3: How do you think this will help and how might you use it?

Help	Use
Karen, Thornton: Really helpful. Will be comparing BMPs in guidance to their strategies	Will use in their comp plan review.
Katie, Fountain: Practical techniques to consider implementing	They will show the case studies to the city council to overcome opposition.
Jessie, Breckenridge: Their Blue River regional group intends to focus on better integration and will use this	
Lindsay, WaterNow: WaterNow is working with communities on better water and land use integration. This guidance is more technically directed than what they would use with elected officials.	Could refer to Growing Water Smart documents as a resource aimed at a higher level.
Micah, ERWSD: They just got their WEP approved, but would have used this if available.	

General question: How will Kevin Reidy use this guidance? Will he look to see if what's in the Water Efficiency Plan comes from the checklist?

Feedback Session Two: Review of Strategy Recommendations

This group focused on the **Foundational Activities** section of the guidance.

Question 4: Is it easy to read? Would anything make it more readable?

The group liked how most strategies started with an action verb – but "consider" is too soft. Change to something more directive, especially for Foundational Activities.

Don't use the "no one size fits all" message in this section.

Don't underline the URLs. It's distracting.

In the Reference section, have the web addresses in the print version because the hyperlinks won't work. Think about what should be different in the print version.

The chapter headings are getting lost. Put the chapter headings at the top of each page. Start a new page for each new chapter.

The text boxes are good; they break up the text. But they should have more paragraphs in them, not one long one.

Consider putting examples in text boxes to further break up the text.

Have a mini Table of Contents for each chapter.

Number the chapters.

Put all the intro stuff (scope, background, incorporating, using the template, etc.) into one big chapter.

This should be a real Addendum to the 2012 guidance, meaning that it should be incorporated into that document online and the new worksheets should be substituted.

This is a really good document – a home run.

Question 5: Is the content presented clearly?

This was addressed in #4 above.

Question 6: Is the content substantive enough to inform your plan development?

This section ended up being a more general discussion.

Prioritize the strategies.

Can it be condensed?

More on tap fees? Would this duplicate 2012 guidance?

In the Education section, combine #2 and #%.

In Foundational Activities, pp. 9-10, may be able to eliminate some duplicative discussion.

Maybe a map showing where the examples are located, to demonstrate that the guidance isn't Front Range centric.

More on post-occupancy enforcement – but there's a lot on this in the WRA manual, just link to that.

It's clear enough we don't want to nitpick.

Kevin Reidy's notes

Session 1

Q1: Will this resource guide be useful in creating a Water Efficiency Plan?

Eagle Co.- Redoing land use code and this will hopefully help

Flo Raitano- Seems too complicated for small providers and seems one size fits all. Not appropriate for elected officials

Denver Water- It's very useful, adds credibility coming from CWCB. CWCB is more of a neutral entity, so not too much baggage. Better because it's a menu of options. Not a regulation so a good thing.

Breckenridge- Likes comprehensive element of it. Demonstrates what others are doing so its not bleeding edge but progressive and provides cover for staff

Highlands Ranch- Its good but difficult to sell in current environment

Aurora Water- Have to have conversation with planning dept. difficult. Might have to be higher level (upper mgmt.) since (water dept.) don't have authority; need help starting conversation. Have to build case with upper management. But it should be helpful.

Q2: What are the pathways available to you to include land use in your WEP?

Denver Water- What's our connection to land use? Need to explore the foundational section. We could do more "thou shalt" than we do. Have to keep in mind the One Water concept and that it is changing rapidly and could be a good entry point.

Highlands Ranch- Targeted Technical Assistance and Education are the most important. There is appetite for change within the community association but not within the developer community and the developers are the board right now. Water budgets are huge pathway for conversation.

Westminster- In the older neighborhoods there is more opportunity to change landscape and other things as they get older and turn over with new residents

Aurora Water- Connection fees are a huge opportunity and the pathway is the connection fee. Mixed use development is newer and trying to figure out how to incentivize that. (Opportunity?)

Breckenridge- What if water providers set goal for new development? (GPCD, GPLandUse, etc)

DRCOG- we have Metrovision and we could incorporate water targets for regions to hit. Did it for transportation

Aurora Water- Going to AMI system. Look at different areas of the city and the uses in those areas. For new areas tying it to connection fee.

Denver Water- No need to incentivize new development to get build; need to incentivize efficiency on end use. 2 paths: 1) Developers- work with them to build it right 2) Make sure end use customer remains efficient

Aurora Water- Take different development types, find out actual use and then extrapolate out to new development

Breckenridge- Low cost of water obscures the pathway and the cost of a tap is rolled into the mortgage so people don't notice it

General notes:

- need more success stories in document (Aurora Water)
- Include realtors
- We could include reference to Peak Spatial tool that helps homebuyers assess their water situation and conservation activities where they want to buy (Kevin)

Q3: How do you think this will help and how might you use it?

Denver Water- Provide cover internally and get buy-in since the ideas are coming from a larger group of experts

High County Conservation Center- can hand it to the work groups (Blue River Regional WEP) and have something ready to access and work on

Aurora Water- Ability to talk to other utilities who have done something (really important) and use case studies

General discussion on how to prioritize the actions in the guide better. Possibly by cost-benefit, conservation impact, cost. Using evaluation criteria to prioritize?

Session 2

Q4: Is this easy to read?

#1- could use example to clarify

#7 – Add affordable housing into example or alternatively wherever public money is spent…

Use icons for various types of water use the bullet or example impacts, ie. Indoor water, outdoor water, residential, mixed use, commercial, etc.

#6b- Require staff to be certified to review plans and have fees to cover review

Terminology – mostly from Aurora Water and focused on #3 a.-f in Ordinances and Regs. Bottom line: She was overwhelmed with how to choose between a PUD or a growth management area or an overlay zone. Tried to emphasize it's the conversation between counterparts around these topics that is important and its not her job to understand these in isolation

- Some terminology not understood
- Not enough information for certain terms to understand why they should choose something over the other
- More background needed to start the conversation with counterparts
- Add goals to show benefit
    - For example, why should I choose X over Y? What would help me understand why I should choose X?
    - Is the solution a short descriptive sentence that states benefits fo X? Is it a glossary?

General discussion on the visual density of the document being a bit much to process. Wanted a way to break it up visually.

DRCOG- Thought it was too verbose and too dense. Their perspective was admittedly from an elected official perspective. Possibly an official's guidebook vs. this more technical document?

My comment: This is an interesting question and got me thinking: From whose perspective is this easy to read? Maybe not from an elected perspective, nor even a land use planner who is not familiar with water. The Aurora Water person was an engineer and she was having trouble understanding terminology but that could be because she is an engineer? Just some thoughts but we also emphasized the foundational work that has to be done which will most likely make it easier for them to understand better eventually.

Note: The group did not progress to Q5 or 6 in this section but I think some of those questions were answered in Q4 discussion.

GROUP: Orange/Technical Asst, Incentives + Education

RECORDER: Erin Rugland

Feedback Session One: The Value of the Best Practices Guidance

Q1: Overall, one a scale of 1 to 5, with 1 being not useful and 5 being very useful, will this resource guide be useful in creating a Water Efficiency Plan?

1 2 3 4 5: ***3.7***

Key Comments:

- Think it will be useful but could be more: how to explain to colleagues in land use planning why this is important, prioritize the list, be able to attach amount of water saved to each practice
- "#3 top things, most practical, most budget-friendly"
- Prioritize the list
- Has there been a study done about the amount of water per unit area based on type of land use; *yes, highlight this more? Westminster case study? Aurora working on this*
- Can this be useful for developers or other entities that have water rights? How can this speak to this and entities (like counties) that have to manage this?—tie in reduced water
- Money that is required to make development efficient may offset affordable housing goals—how to address these disparities
- Checklist is awesome

Feedback Session One: The Value of the Best Practices Guidance

Q2: **Given that land use authority rests with local governments, what are the pathways available to you to include land use in your Water Efficiency Plan?**

Comments:

- Limited by other authorities/capacity—such as sewer
    - Rico example? One Water as a solution?
- Don't charge enough for water
- Residential/customer perceptions—hard to convince people to get rid of grass, for example
- How do deal with unincorporated areas of counties
- Geographic diversity—different needs among communities; meet needs with a blanket regulation
- City leadership making a difference… Thornton city manager, for example, is very supportive
- Sustainability an important theme for some communities; community outreach helps/community needs help (grassroots rather than top down)
- Changing reception/importance of guiding documents like comp plans based on leadership, elections
- Who has adopted LEED or ICCC green plumbing code?
    - Could be a sub-bullet in developer incentives or green building codes
    - Degree of involvement of the development community
        - Scale of potential green construction programs; how to overcome the expectation that they cost more/are longer timelines
        - Awareness in development community about the water regulations
        - In-state vs out-of-state developers
        - Sterling Ranch example? Ellen's Durango developer example?
    - Property managers a hard nut to crack…

Feedback Session One: The Value of the Best Practices Guidance

Q3: **How do you think this will help and how might you use it?**

Comments HELP Comments USE

- Idea generation; easier to discuss things that have already been come up with
- Value in having conversations around this, using doc as a guide
- Guiding long-range planning documents (comp + sustainability)
- Stepping stone to more stringent regulations around development proposals
- Northern Water offer a cafeteria of options to its 33+ cities
    - Create pilot communities
    - Allocate a small fund to create educational examples
    - On-site undertaking some of the examples; helps in training different actors involved
    - Create standard practices
    - This doc provides enough options to choose from

Feedback Session Two: Review of Strategy Recommendations

ORANGE GROUP: TECH ASSISTANCE/INCENTIVES & EDUCATION SECTIONS

Q4: On a scale of 1 to 5, with 1 being not easy and 5 being very easy, is this easy to read?

1 2 3 4 5: ***3.5***

Would anything make it more readable?

- Make fonts consistent
- Would like to see a sans serif font
- Not overly technical or jargon-filled
- Appreciated highlighting
- Appreciated links—check if they all work
    - Worry that they will break and that will reduce usefulness of the document
    - See an intern update the links every year
    - Add a bullet/sentence/excerpt from each link
    - Depending on links too much degrades the value of the document
    - Create footnotes for each link: who did it, what it says, when we accessed it
- A bit dry/a flood of information
- More pictures/diagrams/visuals can help
    - Especially in education section
- It's succinct, easy to read
- Making examples stand out—follow the way we did the text boxes
    - Make sure the fonts print well/show up against the documents
    - Don't like the purple & orange colors for the text boxes
- Bold main points/key words, especially in long lists
    - Table of contents could be more detailed to more easily find info
- Northern Water example for landscaper certification
- Change bullet points to numbers under lower sub-bullets to more easily reference
- Use WaterSense more; reinforce branding aspect

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Q5: On a scale of 1 to 5, with 1 being not clear and 5 being very clear, is the content presented clearly?

1 2 3 4 5: ***4***

What was presented well?	**Was anything unclear or confusing?**
WaterWise funded CWCB guidebook of best practices—pull out the summary	STAR Communities indicators/LEED for cities
Continuity between checklist and practices	City-wide certification—Audubon and STAR/LEED; objective analysis
Like structure—intro, checklist, explanation, worksheets	Top 3 at the beginning of each section
Like the links—don't delete them	Prioritizing the strategies
Good case studies, brought new info for even people that live there	Technical #7—Pace guidebook reference? WRA reference?
Love reference list	Glossary of terms and acronyms (to consider)
	Consider joining WaterSense as a partner, for cities (targeted technical section)
	Reiterate acronyms each time or create a glossary
	Too many caps in table of contents; space apart table of contents
	Strategize how to get to HOAs
	More space on the checklist
	Use or not use option for the checklist and/or rename it as a checklist; guidance on how to use the checklist or it's not a checklist

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Q6 On a scale of 1 to 5, with 1 being not substantive and 5 being very substantive, is the content substantive enough to inform your plan development?

1 2 3 4 5: ***4.5***

Is anything missing that should be included?

- Could include more specific actions
- Process flow diagram, or how to get started (could be an intro the checklist)
- How to gauge effectiveness of each idea (maybe the worksheets)
    - Limits of measurement… maybe explain that, how these practices couple together are hard to quantify
    - Nothing in development exists by itself; some explanation of this
        - What else these practices may address (transportation, water quality)
        - Inforgraphic or icons?
        - These could indicate effectiveness
- Other limitations: waste water, other capacity issues. Should these be addressed?
- A version of this with commentary? Or the previous versions, a reference version
- Recommending AICP certification for staff if this includes water efficiency; LEED may be better
    - Professional certifications that include water efficiency in the professional practice
        - Require in hiring? **Create professional development opportunities** for this?
- Struggle to identify peak population and peak water use in tourist communities—caveat population projection bullet with this?
    - Has anyone successfully done that?
    - Peak water/sanitation flows is best existing estimate; take out irrigation component
- Better to lean toward more information; allow users to determine what's applicable
    - Make it easy to find things—glossary, index, better pagination, etc
- Sustainable Landscape Certification by CO Landscapers; professional development, build water budgets, landscape rejuvenation
- Reiterate importance of avoiding stick/mandates
- General terms of education/outreach—may be helpful to call out specific communities
    - Such as developers, HOAs/multifamily groups, chamber of commerce, realtors, appraisers, etc, to reach out to
- Make this a professional development credit through various organizations
- Add Ft Collins water waste example—Eric Olsen
- Find community example for lower income/Spanish speaking involvement in gov't outreach
- No delineation between new/existing development in some communities (Eagle County); could discuss redevelopment more
- Missing criteria/screening…
    - Standardization across a region; this creates a foundation for statewide adoption of these kinds of codes
    - Foundational for educational piece
    - State have a model landscape ordinance
    - Issue of enforcement—how to enforce codes

Feedback Session Three: Criteria

Q7. What are the criteria you currently use to evaluate potential strategies and tactics in your WEP?

- Reference back to 2012 Guide better in this area
- High public acceptance (can break into specific stakeholders)
- Targets the appropriate customer or water use or customer category
- Implementable from the staff/resource perspective
- Implementable from political perspective
- Prioritizing goals/strategies based on customer feedback
- Demonstration value (as an education tool—publicly visible)
- Cost benefit
- Desire to improve collaboration
    - Desire, willingness, priority, ability, political will
    - Agreement to collaborate
    - Capacity (time, staff, dollars, willingness)
    - Leadership understanding
- Land use planner criteria
    - Larger policy framework, how strategies complement each other
    - Implementing policy/plans
    - Ability to measure
        - Justification for implementing something
    - Readiness assessment/Timeliness—"don't waste a good drought"
        - External conditions/environmental conditions
        - Political cycle
- Political viability
    - Market and/or public leading
    - Developer's come in with a water efficient plan

Challenges

- Geographic diversity, diversity of needs among communities or providers
    - Universal vs. individual strategies
- Buy-in from providers; CONSISTENT BUY-IN
- Knowing who to contact
- Base education of everyone (even if it's not their problem)
- Assessing political viability/readiness
    - Can build readiness, talk to decision-makers, get policy direction

Chose strategies based on:

- Past experiences
- Others doing it
- Relationship exists

Q8. Are these appropriate for land use strategies or is there need to develop new one?

- Guide needs…
    - Relationship building with each water provider
- Possible land use criteria
    - Strengthens what's in the code
    - What's in the realm of control… more apt to push forward, collaboration falls to the wayside

Recommendations in clarifying criteria

- Feedback loop, case studies of what works
- Show value to political leaders—how this affects costs, impacts, infrastructure, bottom line
- West Edwards PUD WEPs
- Capture ERWSD practices… if not captured
- Reach consultants "we hired Clarion so hopefully they'll save us"
- Pull out criteria from examples?
    - Interactive tool that would help pull out most applicable practices
    - CSU urban water innovation network
    - Questions to help guide selection, applicability
        - Set context needed for each practice?
- Evaluation criteria already being used still work for land use; additional layer of needing cooperation from other entities
    - Criteria may vary for foundational needs
    - Train/guidance on readiness; a readiness assessment

Recommendations overall:

- Decision making tool for choosing practices
- How to contact customers
- Peer network
- Review date, update cycle for the doc; can't be a static document
- Facilitate ongoing dialogue (CWCB)
- Financial resources, time resources
- List of talking points for a first meeting between planner & provider?

https://nccd.cdc.gov/doh_mwf/default/default.aspx - mywatersflouride from CDC, shows water providers in each county

BABBITT CENTER
FOR LAND AND WATER POLICY

GETCHES WILKINSON CENTER
FOR NATURAL RESOURCES, ENERGY, AND THE ENVIRONMENT

WORKSHOP INVITATION

Encouraging water efficient development – crucial for stretching water supplies and improving resilience – requires coordination between water providers and land use authorities. The Getches-Wilkinson Center at the University of Colorado and the Babbitt Center for Land and Water Policy are working with the Colorado Water Conservation Board to draft guidance to assist water suppliers in implementing this coordination and incorporating land use efforts into their Water Efficiency Plans. Please join Kevin Reidy, CWCB; Anne Castle, Getches-Wilkinson Center; and Erin Rugland, Babbitt Center, for a ½ day workshop to help craft this guidance.

A draft guidance document, consisting of a set of best practices on integrating water conservation and land use planning, will be circulated to all participants prior to the workshop to elicit comment and suggestions. Water supply practitioners will describe their own efforts and lessons learned. Your participation and input will ensure the best possible product.

What: Workshop on New Guidance for Implementing Water Conservation through Land Use Efforts

Date: Wednesday, October 24

Time: 10:00 a.m.– 2:30 p.m.
Lunch will be provided

Location: Summit County Commons
37 Peak One Drive
Frisco, CO 80443

REGISTER

Registration Deadline:
October 17, 2018

Questions? Contact Erin Rugland
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Water Efficiency Guidance Workshop Attendees

Name (First)	Name (Last)	Email	Title	Organization
Drew	Beckwith	dbeckwith@cityofwestminster.us	Water Resources Specialist	City of Westminster
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Kris	Valdez	kris.valdez@eaglecounty.us	Planner III	Eagle County Government
Karen	Widomski	karen.widomski@cityofthornton.net	Senior Policy Analyst	City of Thornton
Laura	Wing	laura.wing@cityofthornton.net	Water Resources Administrator	City of Thornton
Rachel	Zerowin	rachel@highcountryconservation.org	Community Programs Director	High Country Conservation Center

Registered but did not attend

Joyce	Allgaier	joycea@townoffrisco.com	Community Development Director	Town of Frisco
Kathy	Chandler-Henry	kathy.chandlerhenry@eaglecounty.us	County Commissioner	Eagle County
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