



Citizens' Water Advisory Committee (CWAC) Agenda

Amended

January 11, 2022, 6:00 p.m.

Microsoft Teams Link:

[Click here to join the meeting](#)

or go to:

<https://bit.ly/3bE19es>

Members: Janet Marlow - Chair, Angie Binder - Vice Chair, Jay Campbell, Tom Coker, Richard Eason, William Gondrez, David Patterson

- | | | | |
|-----|---|---------------------------|-----------|
| 1. | Elections – 2022 Chair and Vice-Chair | Chair | 6:00 p.m. |
| 2. | Approval of Minutes – November 9, 2021 | Chair | 6:00 p.m. |
| 3. | Introductions/Public Invited to be Heard | Chair | 6:05 p.m. |
| 4. | New/Old Business | Chair | 6:10 p.m. |
| 5. | Communications Update | Greg Baker | 6:15 p.m. |
| 6. | Non-functional Turf Update | Marshall Brown/Tim York | 6:20 p.m. |
| 7. | Chandler, AZ Commercial/Industrial New Use Approval | Marshall Brown/Greg Baker | 6:30 p.m. |
| 8. | Discuss CWAC Quarterly Report to WPC in January | Chair | 7:20 p.m. |
| 9. | Review/Verification of 2021 Attendance Records | Greg Baker | 7:30 p.m. |
| 10. | Review Follow-Up Questions Generated at this Meeting | Chair | 7:15 p.m. |
| 11. | Confirm Next Meeting – Tuesday, February 8, 2022 | Chair | 7:25 p.m. |
| 12. | Adjourn | Chair | 7:30 p.m. |

Aurora Water was ranked #1 in Customer Satisfaction with Midsize Water Utilities in the West of the J.D. Power 2021 Water Utility Residential Customer Satisfaction Study.

For J.D. Power 2021 award information, visit jdpower.com/awards for more details.



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Citizens’ Water Advisory Committee (CWAC) Minutes
November 9, 2021, 6:00 p.m.
AMC 15151 E. Alameda Pkwy – Aspen Conference Room 2nd Floor

Microsoft Teams Link and phone number:

[Click here to join the meeting](#)

or go to:

<https://bit.ly/3bEI9es>

Public Participation through call in number (listen only)

720-650-7664

Access code: 146 245 5086

Members Present: Janet Marlow - Chair, Angie Binder -Vice Chair, Tom Coker, Richard Eason, William Gondrez, David Patterson

Absent: Jay Campbell

Staff Present: Greg Baker, Leiana Baker, Marion Combs, Greg Hansen, Steve Sciba, Tim York, Jo Ann Giddings, Kyle Fortner, Fernando Aranda, Gail Thrasher, Marshall Brown, Rory Franklin, Laura Perry, Sonya Gonzalez, Marena Lertch

Visitors Present: None

The meeting was called to order at 6:00 p.m.

1. Approval of October 12, 2021 Minutes

The October 12, 2021, minutes were approved.

2. Introductions/Public Invited to be Heard

None.

3. New/Old Business

None.

4. Communications Update

G. Baker stated, coverage on Colorado River challenges continues, mountains have had some snow. T. Coker asked, are we going to get some money from the Infrastructure bill? J. Giddings replied, we plan to apply and are not sure how much it will be. A. Binder asked, have there been any updates on Engage Aurora? G. Baker replied, there have been some comments on the site. We’ll continue to push this out on NextDoor and CU Health is planning to put it out there.

5. Quarterly Financial Report – Third Quarter 2021

J. Giddings gave an overview of the Third Quarter Financial Report. A. Binder asked, how does Aurora rank with other entities on water connection fees? J. Giddings replied, it's difficult to compare, however, we are comparable. F. Aranda added, a survey was done a while ago and Aurora was in the middle. M. Brown added, our connection fees are structured differently. A. Binder asked, are the monthly water sales up over previous years? J. Giddings replied, yes, due to the warm weather. A. Binder asked, will the late water usage have an impact on the water supply? J. Giddings replied, no. F. Aranda added, in May and June the average usage was low. T. Coker asked, did residents get into the higher tier rates? J. Giddings replied, I haven't heard anything.

6. Innovation efforts – 3-D Printing

K. Fortner gave a presentation on the 3D printer that is utilized by the Aurora Water Trade group.

7. Next Step for Big Savings – Connection Fees

F. Aranda and M. Brown gave a presentation. D. Patterson asked, based on the tap fee for certain purposes, are there funds existing that are set aside to acquire water or a general fund concept? M. Brown replied, the revenue collected for the connection fee is designated for specific purposes. Most of the connection fee goes for water resource acquisition and development. A. Binder stated, it sounds like a fee on outdoor irrigation and could it be simpler? M. Brown stated, it's not an irrigation charge. It's intended to give us a mechanism to recover the cost of acquiring and developing water supplies. A. Binder asked, what is the next step? M. Brown replied, we'll go back and calculate the actual cost and figure out where it would translate into the fee structure. D. Eason asked, how will it be implemented? M. Brown replied, nothing has been decided yet.

8. Review Follow-Up Questions Generate at this Meeting

None.

9. 2021 Application & Interview Process

G. Baker stated, three members are up for re-appointment and there are two vacancies. Anticipate more applications for the two vacancies. Interviews will be done on Teams on December 14.

10. Confirm Next Meeting – Tuesday, January 11, 2022**11. Adjourn**

The meeting was adjourned at 7:09 p.m.

Janet Marlow, Chair
Citizens' Water Advisory Committee

Adopted: _____

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MEMORANDUM



City of Aurora

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To: Citizens' Water Advisory Committee
Through: Marshall P. Brown, Director, Aurora Water
From: Greg Baker, Manager of Public Relations, Aurora Water
Date: January 11, 2022
Subject: Nonfunctional Turf Update

Purpose:

Aurora's water conservation efforts have resulted in large and quantifiable water savings, yet about half of the city's water use is still used for outdoor irrigation. Water used in irrigation cannot be recaptured by Aurora Water's Prairie Waters potable reuse system. In order to meet future water needs due to climate change and population growth, increasing the amount of reusable water is a primary goal of the utility. Aurora Water staff have been closely following and effort by the Southern Nevada Water Authority (SNWA) to create a definition for "nonfunctional turf" and regulate its use in the Las Vegas area. An advisory committee recently released a report of findings and a proposed implementation plan.

Staff is investigating a draft ordinance with a similar turf restriction for new development and are working with the city's Planning Department and Park Recreation and Open Space (PROS) to refine any definitions for nonfunctional turf that would allow for programming areas that allow for recreational and social uses of turf. Staff will report out on the current status on these discussions and any programmed uses for turf that have been identified for either exclusion or permission.

Background:

At the Oct. 12, 2021 CWAC meeting, staff presented on SNWA's initial efforts at creating a definition for nonfunctional turf and their directive to regulate its use, as well a public engagement effort by Aurora Water on this topic using the city's Engage Aurora platform (EngageAurora.org). The engagement discussion closed on Jan. 3, 2022, and a survey to determine public acceptance or concerns for any proposal will close on Jan. 31, 2022.

Question:

Is the committee supportive of an ordinance prohibiting the installation of nonfunctional turf in new development?

cc: File copy

Attachments:

- Engage Aurora – Water Conservation Engage Aurora Project Report 1008-21 to 12-30-21
- SNWA Nonfunctional Turf Removal Advisory Committee reports
- SNWA Board Resolution

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Project Report

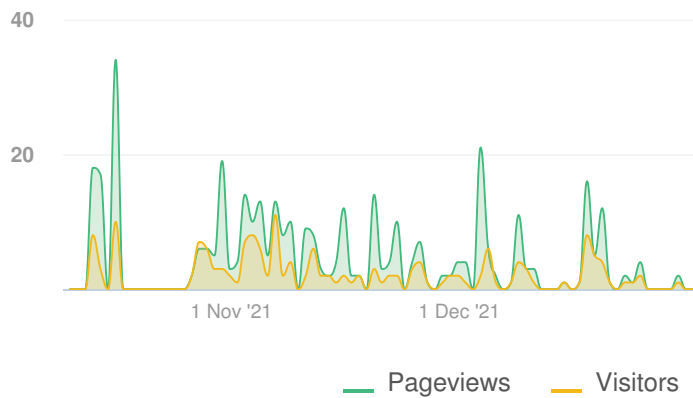
08 October 2021 - 29 December 2021

Engage Aurora

Water Conservation: Next Step for Big Savings



Visitors Summary

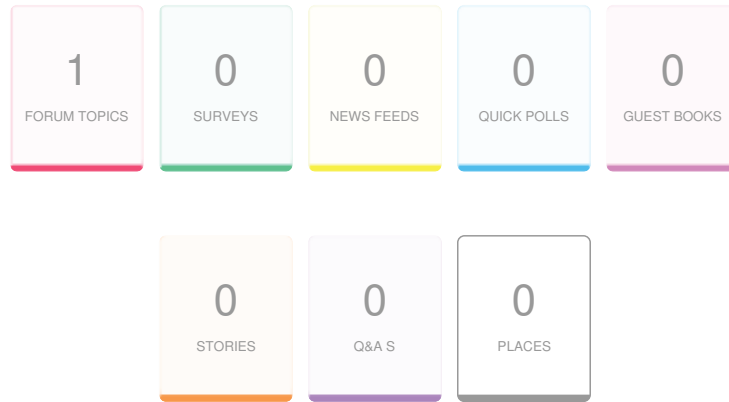


Highlights

TOTAL VISITS	194	MAX VISITORS PER DAY	11
NEW REGISTRATIONS	5	ENGAGED VISITORS	5
		INFORMED VISITORS	42
		AWARE VISITORS	132

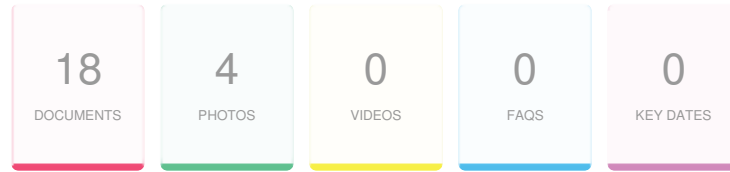
Aware Participants	132	Engaged Participants	5		
Aware Actions Performed	Participants	Engaged Actions Performed	Registered	Unverified	Anonymous
Visited a Project or Tool Page	132	Contributed on Forums	5	0	0
Informed Participants	42	Participated in Surveys	0	0	0
Informed Actions Performed	Participants	Contributed to Newsfeeds	0	0	0
Viewed a video	0	Participated in Quick Polls	0	0	0
Viewed a photo	3	Posted on Guestbooks	0	0	0
Downloaded a document	18	Contributed to Stories	0	0	0
Visited the Key Dates page	10	Asked Questions	0	0	0
Visited an FAQ list Page	0	Placed Pins on Places	0	0	0
Visited Instagram Page	0	Contributed to Ideas	0	0	0
Visited Multiple Project Pages	37				
Contributed to a tool (engaged)	5				

ENGAGEMENT TOOLS SUMMARY



Tool Type	Engagement Tool Name	Tool Status	Visitors	Contributors		
				Registered	Unverified	Anonymous
Forum Topic	Discussion Board	Published	30	5	0	0

INFORMATION WIDGET SUMMARY



Widget Type	Engagement Tool Name	Visitors	Views/Downloads
Key Dates	Key Date	10	10
Document	WATER EQUIVALENTS.pdf	7	7
Document	Conservation 2021Annual Report Presentation	7	9
Document	PWP Fact Sheet.2018.pdf	7	7
Document	SNWA Nonfunctional Turf Removal Advisory Committee 102021.pdf	5	6
Document	Water Acronyms Definition	3	3
Document	SNWA Nonfunctional Turf Removal Advisory Committee Presentation 09/...	3	3
Document	Aurora Water Supply Map.Official	2	2
Document	Diversion Areas Map	1	1
Document	SNWA Turf Ban Resolution 2021	0	0
Document	SNWA NFTRAC Implementation Plan Nov 2021	0	0
Document	SNWA NFTRAC Recommendations Nov 2021	0	0
Document	SNWA NFTRAC Meeting Presentation Nov 17 2021	0	0
Document	SNWA NFTRAC Meeting Minutes Oct 20 2021	0	0
Document	SNWA NFTRAC Meeting Agenda Nov 17 2021	0	0
Document	2021-0607 reviewjournal.com-Nonfunctional grass to be banned in Las...	0	0
Document	2021-0607 apnews.com-Drought-stricken Nevada enacts ban on non-func...	0	0
Document	2021-0409 reviewjournal.com-With water shortage likely SNWA targets...	0	0

INFORMATION WIDGET SUMMARY

Widget Type	Engagement Tool Name	Visitors	Views/Downloads
Document	2021-0409 reviewjournal.com-With water shortage likely SNWA targets...	0	0
Document	SNWA Nonfunctional Turf Legislation.pdf	0	0
Photo	Nonfunctional Turf	3	3
Photo	Native Grasses	2	2
Photo	Functional Turf	2	2
Photo	Alternatives to turf	2	2

FORUM TOPIC

Discussion Board

Visitors 30	Contributors 5	CONTRIBUTIONS 15
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26 October 21			<p>I strongly support limiting non-functional turf. I think the SNWA is a good guide for non-functional turf. I believe it should definitely apply to new development, especially commercial development where irrigation probably has less oversight. I would like to see it applied to existing landscape, but I can see areas where it could seem unaffordable to re-landscape. What incentivizes large landscaping companies like Brightview? to not plant turf when they make lots of money off contracts to cut grass? Can these large companies be better educated on smart irrigation systems? It drives me crazy to see so many sprinklers going when it's raining outside on large commercial and community landscapes. New residential developments should include smart "weather aware" irrigation controllers in new single family homes. Water wise Buffalo Grass and Blue Grama should be emphasized over Kentucky Blue Grass everywhere possible.</p>
Denney_CO			
AGREES 2	DISAGREES 0	REPLIES 2	

27 October 21			<p>Thanks for this input. I spoke with our conservation folks about the large landscape companies. Their comment was most landscapers "get it" and are just as willing to work with water-wise or native landscapes, as do the landscape design firms. The choice for turf is most commonly from the developers. While we're working with developers to reduce the turf areas through incentives, part of this larger engagement effort on non-functional turf may end up driving changes to Aurora's development code (called the Unified Development Ordinance or UDO), which can be found at https://www.auroragov.org/business_services/development_center/codes_rules/building_zoning_code/unified_development_ordinance. We are working with landscapers, HOA and Metro Districts on upgrading to smart, weather-based irrigation controllers and have had some big wins with our rebate programs. Sometimes that pressure also has to come from the residents to their boards.</p>
gbaker			
AGREES 1	DISAGREES 1	REPLIES 1	

27 October 21			<p>Thanks for the update. I realize I was probably making some unfair presumptions about the larger landscape companies. It's good to know they "get it"</p>
Denney_CO			
AGREES 1	DISAGREES 0	REPLIES 0	

FORUM TOPIC

Discussion Board

31 October 21		
gahern13		
AGREES	DISAGREES	REPLIES
0	0	1

I agree that the use of native grasses and forbes is the way to go. At the same time, we need an accompanying paradigm shift in the way these landscapes are maintained. Native perennial shortgrass species such as *Bouteloua gracilis* and *Bouteloua dactyloides* thrive when planted with flowering associates such as *Cleome serrulata*, *Coreopsis tinctoria*, and *Ratibida columnifera* and do particularly well when only managed to prevent the introduction of non-native competitor species. The use of fossil fuel-intensive equipment to cut and manicure these sorts of plantings is wholly unnecessary. Occasional irrigation—to supplement natural precipitation (when not present)—is also vital to the success of these landscapes. What I am afraid to see is Aurora adopt these initiatives and not fully commit to their upkeep. Or, even worse, continue down a path shared by projects such as the one renovating center medians on Smoky Hill Road. The gravel hardscapes being installed quickly become an eyesore and further reduce the appeal of arterial corridors within the City's jurisdiction. If Aurora wants to be respected in the ways places such as Lone Tree, Highlands Ranch, and Greenwood Village are, we need to commit to creating and maintaining appealing rights-of-way that attract a wide spectrum of socioeconomic demographics to Aurora. Unfortunately, abundant water and its use on the landscape is foundational to improving Aurora's reputation. Serious cosmetic and functional capital investments need to be made—most of which require a reliable supply of abundant water resources—in order to create the communities which attract members of the professional class to Aurora. If the City continues its race to the bottom of the barrel in terms of infrastructure, we are only going to perpetuate the decayed social and cultural environments which seem to be growing in our community.

31 October 21		
gahern13		
AGREES	DISAGREES	REPLIES
0	0	1

Why do we continue to give our abundant wastewater resources away to agencies such as Metro Water Recovery? Why is Aurora Water incapable of reclaiming (on its own) the nearly 100 MGD it surrenders to Metro Water? Why has Aurora Water not constructed a regional wastewater treatment facility large enough to treat, reclaim and reuse this abundant resource? Why did we construct a plant only large enough to reclaim 5 MGD for municipal use? Why was the secondary effluent of everyone else's wastewater treatment facilities (that found in the S. Platte downriver from the Metro) good enough for indirect potable reuse? Why do we not have purple line all throughout the city, providing reclaimed water for landscapes all throughout Aurora? From wastewater produced and subsequently treated here in Aurora? Why is pharmaceutical-laden reclaimed water not good enough for our irrigation needs, but is good enough for indirect (arguably direct) potable reuse...?

FORUM TOPIC

Discussion Board

01 November 21			<p>Great questions. Let me address a couple of things. First, our daily average flows to Metro are about 25 million gallons per day, not 100 MGD. This represents the internal use that enters the sewer collection system. Irrigation use is lost to plant consumption and evaporation, so it's not recoverable. Metro Water Recovery (formerly Metro Wastewater Reclamation District) provides Aurora and other metro entities with a consolidated wastewater system. They treat all of our sewage to state and federal standards. Waste water treatment benefits from the economy of scale a large treatment facility can provide. Metro does not, however, keep the water. Once it is fully cleansed to stream standards, it is returned to the South Platte River. Metro actually does not own any water rights and cannot keep any of the water that is left after treatment. This provides the basis for our Prairie Waters system, which then recapture's that water downstream and uses a multibarrier treatment process to remove substances such as pharmaceuticals and personal care products before it comes back into our system. You can learn more about this at http://PrairieWaters.org. Why not expand the use of our reclaimed water system, which currently can provide up to 5.5 MGD to city facilities? First, this system, which you correctly refer to as "purple pipe" (the color of pipes and hydrants that distribute this water), requires a dedicated treatment and distribution system. Our Sand Creek Water Reclamation Facility "skims" water off the pipes carrying sewerage to Metro. We treat and disinfect this water to meet state regulatory requirements for reclaimed water and provide it to municipal parks and golf courses and send the "solids" back to Metro. The limitations come down to the treatment capacity at Sand Creek (and any associated cost with expanding this capacity, which would be substantial), as well as the increased treatment cost to meet anticipated increased regulatory requirements. The biggest hurdle here is that the "purple pipe" is a dedicated pumping and pipeline distribution only for seasonal use. If we were to expand this, we would need to add hundreds of miles of additional pipes, pumps and storage (we have no storage now for reclaimed water – Parks uses ponds and dedicated pumping stations at their point of use). Building a new distribution system would cost hundreds of millions of dollars to meet the needs of the irrigation season, May through mid-October. While some communities have advocated for the expanded use of purple pipe, this only provides a second use of water that has been moved from the mountains. One use for internal consumption, then one use for irrigation. The inefficiency is the use for irrigation, since we lose this to evaporation. Prairie Waters is much more efficient, since it is potable reuse. The water can be used and reused again and again, until extinction. The more water that is returned to the river means the more we can continue to recapture this through multiple uses.</p>
gbaker			
AGREES	DISAGREES	REPLIES	
0	0	1	
01 November 21			<p>Thanks for your input. I'll pass your concerns on to our Parks Department, which maintains the medians. Median's are a challenge overall, not only with any irrigation system, but finding the right mix of plant materials that are saline resistant due to their high exposure to mag chloride.</p>
gbaker			
AGREES	DISAGREES	REPLIES	
0	0	0	
07 November 21			<p>Much thanks for the detailed and informative reply. There is a lot of good information here for me to continue reading up on. Thanks for all you do to provide us with clean, safe water in Aurora. Keep up the good work!</p>
gahern13			
AGREES	DISAGREES	REPLIES	
0	0	0	

FORUM TOPIC

Discussion Board

17 November 21		
reed523		
AGREES	DISAGREES	REPLIES
0	0	1

I appreciate this discussion. I'm new to the area (and to this communication platform) so I apologize in advance if I mention something that's already been addressed. I'm very much in favor of the conceptual idea of limiting non functional (regularly irrigated) turf areas. To this point, I would like to see clear separation in any regulations between cool season species and warm season species. Warm seasons, while needing occasional irrigation, can still offer a lot of value to the landscape, even when dormant. In some cases, they can be the ideal solution to a low maintenance landscape application. Also, I would love to see the city work with HOA's to amend their landscape policies and regulations that run counter to best landscape design/irrigation practices for using less water.

18 November 21		
gbaker		
AGREES	DISAGREES	REPLIES
0	0	0

Thank you for your engagement in the discussion. These are all great points that will help us in our planning process. We promote and encourage the use of warm season grasses for non-active spaces. This is reflected in our conservation programs that incentivize conversions for existing landscapes and also in our approach to policies surrounding new development. Our Water Conservation team routinely interacts with HOAs through various programs to create more sustainable landscapes. What we can't control is the standards an HOA can place on the maintenance of an installed landscape. Education and engagement with residents of HOAs is our best tool to encourage acceptance of efficient watering practices.

SOUTHERN NEVADA WATER AUTHORITY

IMPLEMENTATION PLAN FOR THE REMOVAL OF NONFUNCTIONAL TURF IN SOUTHERN NEVADA

JANUARY 2022



SOUTHERN NEVADA WATER AUTHORITY™

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SOUTHERN NEVADA WATER AUTHORITY

**IMPLEMENTATION PLAN FOR THE
REMOVAL OF NONFUNCTIONAL TURF
IN SOUTHERN NEVADA**

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I. EXECUTIVE SUMMARY

Southern Nevada relies on the Colorado River to meet approximately 90 percent of its water demands. For the past 20 years, the Colorado River has been subject to persistent drought conditions and a hotter, drier climate, leading to significant declines in Lake Mead. Given the federally declared shortage on the Colorado River, Southern Nevada continues to pursue initiatives to reduce consumptive use and conserve water resources.

One of its principal focuses in reducing consumptive use is the reduction of nonfunctional turf within the community. Nonfunctional turf provides no recreational value, is decorative or is not safe to access and use. It is found throughout Southern Nevada, within business complexes and neighborhoods, schools, parks, government facilities, along community streets, and in traffic circles and medians.

The unused grass in Southern Nevada soaks up about 12 billion gallons of water every year; the equivalent of more than 10 percent of Nevada's entire allocation of water from the Colorado River. Removal of this large water waster is paramount to meeting Southern Nevada's future demands.

In June 2021, the Nevada Legislature enacted Assembly Bill (AB) 356, which prohibits the use of Colorado River water to irrigate the nearly 4,000 acres of nonfunctional turf on properties that are not zoned exclusively for single-family residences on and after January 1, 2027. The legislation also directed the SNWA Board of Directors to develop a plan for the removal of nonfunctional turf in the Las Vegas Valley; this plan serves to meet the requirements of the legislation and sets forth a strategy for the removal of Southern Nevada's nonfunctional turf.

The Legislature also created the Nonfunctional Turf Removal Advisory Committee (NTRAC) to help the SNWA define functional and nonfunctional turf. In July 2021, the SNWA Board appointed nine individuals representing commercial and industrial properties, homeowners' associations, golf courses, multifamily properties, environmental interests and municipalities. The recommendations put forward by this committee are incorporated into this plan and represent significant work and consideration by a group of individuals committed to maintaining a sustainable future for Southern Nevada.

The implementation plan is comprised of the following actions by the SNWA Board:

- Accept the NTRAC-recommended definitions of functional turf and nonfunctional turf to be adopted by each of the purveyor member jurisdictions
- Authorize a waiver process as authorized by AB 356 and recommended by NTRAC
- Accept the December 31, 2026 deadline set by AB 356 for turf removal for all sectors
- Do not authorize any extensions to the deadline
- Do not establish any phases that would require a sector to remove turf earlier than the deadline
- Conduct outreach to affected sectors based on NTRAC recommendations and the adoption of this implementation plan

IMPLEMENTATION PLAN

The need to remove nonfunctional turf in Southern Nevada is critically important. Nearly 4,000 acres of nonfunctional turf remain in non-single family residential sectors throughout Southern Nevada. Each year, this unused turf wastes 9.5 billion gallons of water and its irrigation often yields additional unintended consequences such as unsafe driving and play surfaces, degradation to sidewalks and retaining walls, and ongoing maintenance costs.

While Southern Nevada has made considerable progress in encouraging businesses and non-single family residential water users to voluntarily remove nonfunctional turf through incentive programs, hold outs remain. AB 356 represents one of the most progressive pieces of legislation in the United States relating to landscape efficiency, and with the impending resource constraints, implementation must start now.

DEFINITIONS

For nearly six months, the Nonfunctional Turf Removal Advisory Committee considered how nonfunctional turf and functional turf should be defined for the community. Clear, transparent and objectively applicable definitions are important to ensure enactment of the legislation and reduce ambiguity and time-consuming clarifications. General definitions were developed for specific uses within the community. The committee considered how turf was being used within each sector and developed definitions that identified grass providing safe, accessible recreational value.

As part of this implementation plan, the SNWA Board accepts the Committee-approved definitions, which are included in Appendix A of this plan. Upon approval by the SNWA Board of Directors, these definitions must be adopted by SNWA purveyor members and incorporated into their respective service rules and codes. In each purveyor member jurisdiction, Colorado River resources may not be used to irrigate turf meeting the Nonfunctional Turf on or after the deadline established in the legislation.

WAIVERS

While AB 356 provided for a waiver process, it did not define the process. The committee discussed the need for a waiver process since some turf applications might substantially conform with the functional turf definition or provide a recreational benefit to the community but not meet the specific criteria to be considered functional. The committee discussed the application, review and appeal processes for waivers. Ultimately, they supported a waiver process that allows an applicant an opportunity to demonstrate that the turf substantially complies with the functional turf definition.

While any water user can apply for a waiver, not every waiver will be granted. The waiver process is outlined in Appendix C, which includes a process for appeals. It is important to note that the waiver and appeal processes are governed by SNWA and not its purveyor members pursuant to AB 356.

EXTENSIONS

While the legislation permits the SNWA Board to consider implementation of extensions, it is premature at this juncture to consider a process for extensions. The SNWA feels strongly that properties affected by the implementation of AB 356 with nonfunctional turf should act immediately in response to shortage conditions on the Colorado River and take advantage of the rebate programs currently offered. The SNWA recognizes that many properties have a significant amount of turf to remove, and the entire five-year period might be necessary to accomplish large turf removal projects.

DEADLINES AND PHASES

With the enactment of the legislation, the SNWA recognizes the significant increase in workload required from its conservation staff to support nonfunctional turf conversions in the community. Establishing phases and deadlines among sectors at the time of implementation could potentially lead to unintended consequences, such as discouraging immediate action. At this time, staff is recommending that all sectors be given until December 31, 2026 to discontinue irrigation of nonfunctional turf.

Deadlines and phases may be more prudent in the future, but upon approval of this plan, they are not recommended.

OUTREACH

Nonfunctional turf exists in nearly every corner of Southern Nevada and the number of property owners affected by AB 356 is large. As such, the SNWA will undertake significant outreach efforts to explain the intent of AB 356 and offer resources to help property owners comply with the law.

Recognizing that outreach cannot be a one-size-fits-all approach, the SNWA will utilize a myriad of tools to reach property owners and customers. These include, but are not limited to:

- *Direct Mail:* Together with its member agencies, the SNWA will issue direct mail to owners/customers with targeted information about nonfunctional turf and how they can begin their conversion.
- *Web Information:* SNWA will develop web pages that include definitions and examples, with links to helpful resources such as plant lists, sample landscapes and Water Smart Landscapes program information.
- *Social Media:* SNWA maintains many active social media accounts, including Instagram, Twitter, Facebook and YouTube. Relevant content will be featured and partners invited to reshare to increase awareness.
- *Speakers Bureau:* Presentations will be tailored to affected sectors and industries.
- *Stakeholder Briefings:* Briefings will be scheduled with professional and civic associations, community leaders and local governments.
- *Water Bill Information:* SNWA will work with its member agencies to include specific messaging about AB 356 and where to find more information.

- *Vegas Valley H2O*: The SNWA's public access TV show has and will produce short segments about the legislation and how property owners can access more information.
- *Springs Preserve Tours*: With more than 8 acres of water efficient landscaping, the Springs Preserve will offer regular tours for property owners, landscape managers and customers who are interested in learning more about selecting plants and native landscapes.

CONCLUSION

The implementation of AB 356 will require significant effort from property owners, property managers, landscape professionals, local governments and SNWA conservation personnel. Their support and help in this effort will reduce water consumption and keep Southern Nevada a beautiful and sustainable community. The SNWA Board has the authority to alter or modify this plan at any time at a future public meeting.

APPENDIX A

<< Committee-approved NTRAC Definitions inserted here >>

APPENDIX B

<< AB 356 Language Here >>

APPENDIX C

WAIVER PROCESS

REVIEW PROCESS:

1. SNWA staff will review applications to determine if the turf substantially complies with the functional turf definitions and if the turf provides a recreational benefit to the community.
2. SNWA staff may condition the approval based on irrigation efficiency, presence of public use facilities, accessibility, proximity to roadways, and overall turf acreage (based on recreational use and number of persons served) and any other requirements that ensure turf remains functional.
3. SNWA staff will document all decisions and correlate outcomes to the established functional/non-functional turf definitions.

RECONSIDERATION AND APPEAL:

- If an entity is not satisfied with the staff decision, it may file a written notice of appeal to the SNWA General Manager within 10 calendar days. The General Manager shall conduct and complete a review of staff's decision and issue a decision on the appeal within 30 calendar days of receipt.
- If an entity is not satisfied with the General Manager's decision, it may file an appeal to the SNWA Board within 10 calendar days of receiving the General Manager's decision.
- Appeals to the SNWA Board will be scheduled for the next available meeting date, subject to processing and posting timelines.

SOUTHERN NEVADA WATER AUTHORITY

**NONFUNCTIONAL TURF REMOVAL
ADVISORY COMMITTEE**

RECOMMENDATIONS
REPORT

NOVEMBER 2021



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SOUTHERN NEVADA WATER AUTHORITY
**NONFUNCTIONAL TURF REMOVAL
ADVISORY COMMITTEE**

RECOMMENDATIONS REPORT

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EXECUTIVE SUMMARY

The Southern Nevada Water Authority (SNWA) has a history of seeking public input through citizens advisory committees to evaluate major organizational initiatives.

In June 2021, the Nevada Legislature enacted Assembly Bill (AB) 356, which directed the SNWA Board of Directors to develop a plan for the removal of nonfunctional turf in the Las Vegas Valley. The Legislature also created the Nonfunctional Turf Removal Advisory Committee to be appointed by the SNWA Board of Directors to help the SNWA develop its plan for removal of nonfunctional turf. The committee was comprised of the following nine voting members, representing office parks, businesses, industrial or commercial facilities, golf courses, common-interest communities (x2), multi-family housing facilities, environmental organizations, and local governments:

- Mauricia Baca
Environmental Organization
- Scott Black
Local Government
- Stephanie Bressler
Multifamily Housing
- Thomas Burns
Business
- Tena Cameron
Office Park
- Larry Fossan
Common-interest Community
- Dale Hahn
Golf Course
- David Strickland
Industrial/Commercial
- Brian Walsh
Common-interest Community

From August 2021 to November 2021, the committee met four times to formulate recommendations to the SNWA Board of Directors on defining “functional turf” and “nonfunctional turf,” and outlining a process for waivers to the nonfunctional turf removal requirements.

This report summarizes the activities and results of the committee process. Section I is an overview of the issue and AB 356, Section II reviews the NTRAC scope and discussion topics, and Section III summarizes the committee’s recommendations.

I. OVERVIEW OF ISSUE AND AB 356

Southern Nevada relies on the Colorado River for 90 percent of its water supply. The Colorado River system is facing the worst drought in the river basin's recorded history. The water level of Lake Mead, which serves as one of the river's primary water storage reservoirs, has dropped approximately 130 feet since January 2000.

Because of low water levels at Lake Mead, the federal government issued a water shortage declaration on the Colorado River, reducing the amount of water Southern Nevada can withdraw from Lake Mead beginning in January 2022. Combined with existing voluntary contributions outlined in the Drought Contingency Plan, the declared shortage will cut Southern Nevada's annual water allocation by nearly 7 billion gallons in 2022, which equates to enough water to serve more than 40,000 households for a year. Should Lake Mead's water level continue to decline, additional cuts will follow.

For 20 years, the Southern Nevada Water Authority (SNWA) has been taking proactive actions to respond to the drought and prepare for potential water cuts. The SNWA's Water Resource Plan details how it plans to meet the community's water needs, both in the short term and for the next half-century, including reducing outdoor water demands.

Nearly all the water Southern Nevada uses indoors is recycled. However, water used outside evaporates and cannot be recycled. Approximately 60 percent of Southern Nevada's water is used outdoors. For this reason, the Authority's conservation rebates and programs focus on reducing water use outdoors.

Nonfunctional turf provides no recreational value, is largely decorative, or not safe to access and use. It is found throughout Southern Nevada, within business complexes and neighborhoods, schools, parks, government facilities, along community streets, and in traffic circles and medians.

The unused grass in Southern Nevada soaks up about 12 billion gallons of water every year; the equivalent of more than 10 percent of Nevada's entire allocation of water from the Colorado River.

In June 2021, the Nevada Legislature enacted AB 356, which directed the SNWA Board of Directors to develop a plan for the removal of nonfunctional turf in the Las Vegas Valley. The legislation prohibits the use of Colorado River water to irrigate the nearly 4,000 acres of nonfunctional turf on properties that are not zoned exclusively for single-family residences after January 1, 2027.

The Legislature also created the Nonfunctional Turf Removal Advisory Committee to help the SNWA define functional and nonfunctional turf. In July 2021, the SNWA Board of Directors appointed nine individuals representing commercial and industrial properties, homeowners' associations, golf courses, multifamily properties, environmental interests and municipalities to the Nonfunctional Turf Advisory Committee.

II. COMMITTEE SCOPE AND DISCUSSION

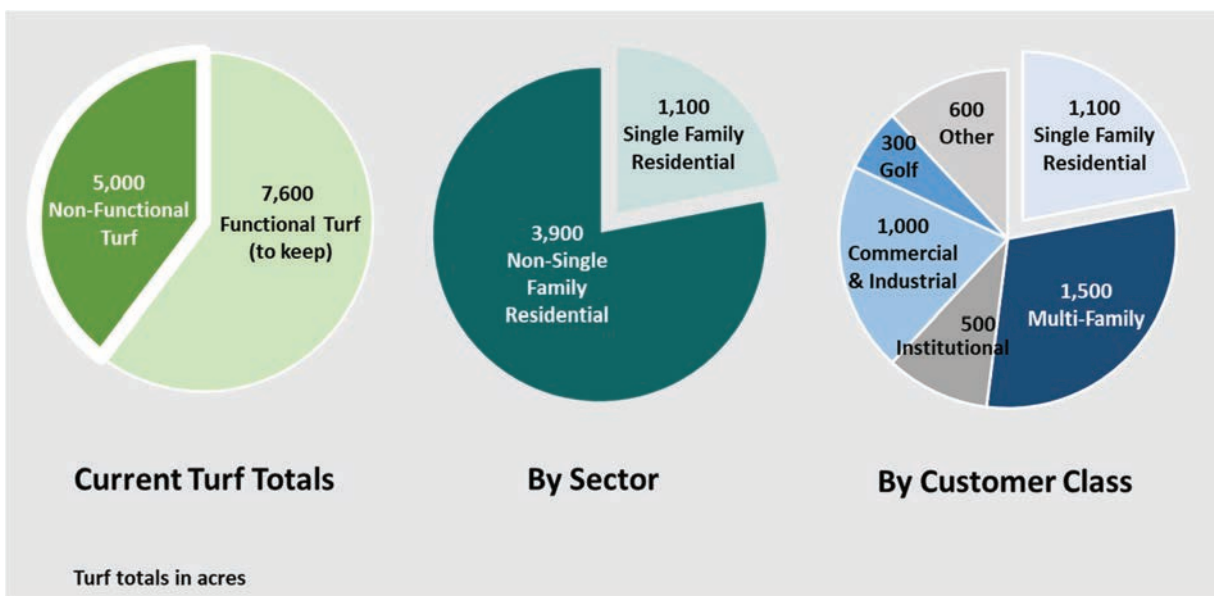
When the Nevada Legislature passed AB 356, creating the Nonfunctional Functional Turf Removal Advisory Committee (NTRAC), it outlined the committee’s responsibilities, which include discussing issues related to the use and removal of nonfunctional turf by each water use sector and providing written recommendations to the SNWA Board of Directors regarding the plan to remove nonfunctional turf in Southern Nevada. The bill also provided for a waiver process, but it did not define the process.

From August 2021 to November 2021, the committee met four times to formulate recommendations to the SNWA Board of Directors on defining “functional turf” and “nonfunctional turf,” and outlining a process for waivers to the nonfunctional turf removal requirements.

Beginning with its first meeting, NTRAC heard from SNWA staff regarding the water challenges facing the community, including the unprecedented drought in the Colorado River basin. Additionally, NTRAC reviewed the Authority’s conservation programs.

Since 2002, Southern Nevada has made considerable conservation gains; however, conservation progress has stalled in recent years. With the need for additional conservation, a previous citizens advisory committee recommended several conservation-related initiatives, including efforts to reduce existing nonfunctional turf in the valley.

Most of the nonfunctional turf in Southern Nevada (approximately 3,900 acres) exists in non-single family residential sectors:



By removing this nonfunctional turf, Southern Nevada can save about 9.5 billion gallons or 29,150 acre-feet of water per year.

FUNCTIONAL VS. NONFUNCTIONAL TURF

Over the next meetings, NTRAC focused on defining functional and nonfunctional turf to address the existing nonfunctional turf installations in Southern Nevada. In July 2019, the SNWA Board approved the SNWA's Nonfunctional Turf Resolution, which established parameters for new installations of turf, ensuring that it is accessible, provides recreational value and can be watered efficiently. More specifically, the resolution limited new grass installations to programmed recreational areas at parks and schools, ensured new grass installations were large enough to provide meaningful active recreation, ensured safety and access, and limited slopes to prevent inefficient watering practices.

While municipal development codes in Southern Nevada have been updated to reflect these requirements, the committee discussed how nonfunctional turf exists within existing major sectors, such as commercial, multifamily, municipal, public services, religious institutions, and common-interest communities. The committee considered how some of the Nonfunctional Turf Resolution's principles could be incorporated into the definitions of functional and nonfunctional turf and applied through different sectors. The results of the committee's discussions are defined within the "recommendations" section of this report.

WAIVERS

While AB 356 provided for a waiver process, it did not define the process. The committee discussed the need for a waiver process since some nonfunctional turf applications might substantially conform with the functional turf definition or provide a recreational benefit to the community despite their sector application. The committee discussed the application, review and appeal processes. The results of the committee's discussions are defined within the "recommendations" section of this report.

SUMMARY

At the committee's October meeting, it finalized a set of sample definitions for functional and nonfunctional turf by sector. The committee also discussed the details of a waiver process. Following the meeting, a draft recommendations report was compiled by staff and provided to the committee. At the November 17, 2021 meeting, the committee approved its final recommendations and recommendations report.

III. RECOMMENDATIONS

After evaluation of the issue of nonfunctional turf in Southern Nevada, the committee reached consensus on the following recommendations, which will be transmitted to the SNWA Board of Directors for consideration and approval:

1. *Define Nonfunctional Turf as:*

“Nonfunctional Turf” means irrigated lawn grass area not meeting the below definition of Functional Turf, including without limitation, such areas in the following locations:

- Streetscape Turf: Except as otherwise specified, turf located along public or private streets, streetscape sidewalks, driveways and parking lots, including but not limited to turf within community, park and business streetscape frontage areas, medians and roundabouts.
- Frontage, Courtyard, Interior and Building Adjacent Turf: Turf in front of, between, behind or otherwise adjacent to a building or buildings located on a property not zoned exclusively as a single-family residence, including but not limited to maintenance areas and common areas.
- Certain HOA-Managed Landscape Areas: Turf managed by a homeowner association that does not provide a recreational benefit to the community or that otherwise does not qualify as Functional Turf, regardless of the property zoning.

2. *Define Functional Turf as:*

“Functional Turf” means an irrigated lawn grass area that provides a recreational benefit to the community and is:

(a) located at least 10 feet from a street (except as otherwise specified), installed on slopes less than 25 percent, and not installed within street medians, along streetscapes or at the front of entryways to parks, commercial sites, neighborhoods or subdivisions; and

(b) Active/Programmed Recreation Turf, Athletic Field Turf, Designated Use Area Turf, Golf Course Play Turf, Pet Relief Turf, Playground Turf or Resident Area Turf, as these terms are further defined and qualified below.

“Active/Programmed Recreation Turf” means irrigated lawn grass in an active/programmed recreation area on homeowner association-owned or managed property or at a public park or water park (excluding park streetscape and community frontage areas).

Active/programmed recreation turf at existing properties must be:

- 1,500 contiguous square feet or greater
- Co-located with facilities, including but not limited to trash bins, benches, tables, walking paths and/or other recreational amenities
- Located at least 10 feet from a public or private street or interior facing parking lot unless:
 - The contiguous turf area is at least 30 feet in all dimensions; or
 - The turf is immediately adjacent to an athletic field

“Athletic Field Turf” means irrigated lawn grass used as a programmed sports field or for physical education and intermural use that is 1,500 contiguous square feet or greater, not less than 30 feet in any dimension, and located at a school, daycare, youth recreation center, senior center, public park, private park, water park or religious institution. Athletic Field Turf may be located less than 10 feet from a public or private street or interior-facing parking lot if the contiguous turf area is at least 30 feet in all dimensions.

“Designated Use Area Turf” means irrigated lawn grass designated for special use at cemeteries and mortuaries.

“Golf Course Play Turf” means irrigated lawn grass at a golf course in driving ranges, chipping and putting greens, tee boxes, greens, fairways and rough.

“Pet Relief Turf” means irrigated lawn grass at a property providing commercial and retail services for pets that is designated for pet use (such as veterinarians or boarding facilities). Pet Relief Turf may not exceed 200 square feet.

“Playground Turf” means irrigated lawn grass in designated play areas with playground amenities, including but not limited to slides, swings and climbing structures on homeowner association-owned or managed property or at a public park, water park, school, daycare, youth recreation center, senior center or religious institution. Playground Turf may be located less than 10 feet from a public or private street if fenced.

“Resident Area Turf” means up to 150 square feet of irrigated lawn grass per dwelling unit at multi-family residential properties, commercial/multi-family mixed use properties, extended stay hotels/motels, or assisted living and rehabilitation centers used by tenants for recreation and leisure. Resident Area Turf must be in areas reasonably accessible for active use by residents and therefore may not be located in streetscape frontages, parking lots, roundabouts, medians, driveways and other non-accessible or exclusive-use areas such as commercial courtyards.

3. *Establish a waiver process for non-single family residential properties for turf that is not permitted under the current definitions.*

Any establishment can apply for a waiver. Waiver applicants must demonstrate that the turf substantially complies with the Functional Turf definition as indicated by conditions, such as activity type, activity appropriate dimensions, number of persons served, frequency of use, location in proximity to similar turf areas, public access, presence of facilities and/or other recreational amenities, and irrigation efficiency.

The process should also include an opportunity for an applicant to appeal staff decisions to the Authority’s General Manager and the SNWA Board of Directors.

4. *Reconvene the Nonfunctional Turf Removal Advisory Committee as needed to discuss other issues pertaining to the implementation of AB 356.*

The committee noted the potential for budgetary and timeline challenges for some establishments to remove large areas of nonfunctional turf. As staff monitors the community’s progress in removing nonfunctional turf, NTRAC should be reconvened in the future to address implementation issues.

5. *Conduct outreach activities with non-single-family residential property owners and managers to support implementation of AB 356.*

The committee recommends that staff conduct extensive outreach activities to support the implementation of AB 356, including marketing efforts, online tools, and staff site evaluations.

APPENDIX A

Meeting Summaries

APPENDIX B

January 20, 2022 SNWA Board Agenda Item

Subject:

Resolution Supporting a Prohibition on New Turf Installations & The Installation and Use of New Spray Irrigation

Petitioner:

Colby N. Pellegrino, Deputy General Manager, Resources

Recommendations:

That the Board of Directors adopt a resolution (1) supporting a prohibition on the installation of new irrigated turfgrass and the installation and use of spray irrigation systems in new development in the service areas of SNWA's purveyor members, except in parks, schools and cemeteries; and (2) urging the immediate revision of applicable regulatory codes, ordinances and policies to implement the prohibition.

Fiscal Impact:

None by approval of the above recommendation.

Background:

Conservation of water resources remains a priority for the Authority, and the federal shortage declaration underscored the importance of continued conservation. Reducing Southern Nevada's consumptive water use is the most effective way to realize water conservation savings, and outdoor irrigation represents the community's largest consumptive use, exhausting more than one-half of Nevada's annual Colorado River allocation each year.

The Authority has worked with its member agencies to reduce the proliferation of nonfunctional turf in Southern Nevada in the past, which has yielded considerable water savings. For example, amendments to development codes prohibiting turf in the front yard, limiting backyard turf to 50 percent of the landscapable area, and prohibiting turf in commercial and industrial applications reduced the resource impact of new development. While considerable savings were realized by prior development code changes, it is now necessary to implement more restrictive policies to ensure Southern Nevada's water resources can meet our community's water demands.

On average, irrigated turfgrass consumes 55 more gallons of water per square foot than water efficient landscaping. As turf continues to be installed throughout the service areas of SNWA's purveyor members, water demand increases. This resolution, if approved, will establish a regional policy prohibiting the installation of grass and the installation and use of spray irrigation in all new development, except in schools, parks and cemeteries.

If this resolution is approved, the Authority will work with local municipal planning agencies to implement the resolution and update codes and land use policies accordingly. With diminishing water resources dependent on an uncertain climate moving forward, it is necessary to ensure that our community develops in the most efficient way possible. Further restricting new turf installations and the installation and use of spray irrigation promotes water efficiency and will help sustain our community into the future.

This resolution is being entered into pursuant to Section 6(p) of the SNWA 1995 Amended Cooperative Agreement. The office of the General Counsel has reviewed and approved this resolution.

RESOLUTION
**A RESOLUTION PROHIBITING THE INSTALLATION OF NEW
TURFGRASS AND SPRAY IRRIGATION SYSTEMS WITHIN
THE SERVICE AREA OF SNWA’S PURVEYOR MEMBERS**

WHEREAS, the Southern Nevada Water Authority (“Authority”) is a political subdivision of the State of Nevada created on July 25, 1991, by a Cooperative Agreement among the Big Bend Water District, City of Boulder City, City of Henderson, City of Las Vegas, City of North Las Vegas, Clark County Water Reclamation District (f/k/a Clark County Sanitation District), and Las Vegas Valley Water District;

WHEREAS, the Authority is the regional water entity responsible for managing and developing water supplies to meet current and future water demands of Southern Nevada, and the Authority manages a comprehensive conservation program for the community to reduce demands that includes a mix of policy, education, pricing and incentives;

WHEREAS, approximately 90 percent of the water used by SNWA’s purveyor members is from the Colorado River through Lake Mead;

WHEREAS, the Colorado River is facing the worst drought in the Colorado River Basin’s recorded history, and the water levels of Lake Mead have declined by approximately 150 feet since January 2000;

WHEREAS, for the first time ever, on August 16, 2021, the United States Department of Interior declared a water shortage for the Colorado River;

WHEREAS, return flow credits are a valuable and important water resource for Southern Nevada, and represent Southern Nevada’s ability to recapture water used indoors, send it to a wastewater treatment facility where it is highly treated, and discharge the water to Lake Mead where it can be used again;

WHEREAS, water uses that cannot be treated and used again are considered consumptive uses;

WHEREAS, landscape irrigation consumes more than half of Nevada’s Colorado River allocation and represents Southern Nevada’s largest consumptive water use;

WHEREAS, the spray irrigation of turfgrass consumes on average 55 gallons more water per square foot per year than water efficient landscaping;

WHEREAS, water efficient landscaping with a mix of desert-adapted plants and trees, requires significantly less water while maintaining property values;

WHEREAS, irrigated turfgrass at new parks, schools and cemeteries is the only use of new turfgrass that warrants the use of Southern Nevada’s limited water supply;

WHEREAS, enhanced conservation measures are needed to continue to provide sufficient and reliable water service to ;

WHEREAS, restricting the installation of new turfgrass and the use of spray irrigation in all new development with the exception of schools, parks and cemeteries is an action required to meet Southern Nevada’s water conservation goals.

NOW, THEREFORE, BE IT RESOLVED that:

1. The Board finds that enhanced conservation measures must be implemented to extend water resources in SNWA's purveyor members service areas.
2. The Board finds that irrigated turfgrass, except in parks, schoolgrounds and cemeteries, is a non-essential use of water in this community.
3. The Board supports a regional prohibition of the installation of turfgrass in all new developments, except in parks, schools and cemeteries.
4. The Board supports a regional prohibition of the installation and use of spray irrigation systems for all landscapes in new development, except in parks, schools and cemeteries.
5. The Board supports the foregoing principles being introduced and adopted into the regulatory codes, ordinances and policies of the SNWA's member agencies as quickly as possible to reduce consumptive use and extend water resources.

INTRODUCED, PASSED AND APPROVED this _____ day of _____, 2021.

Attest: Southern Nevada Water Authority:

John J. Entsminger, General Manager

Marilyn K. Kirkpatrick, Chair

Approved to Form:

Gregory J. Walch, General Counsel

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MEMORANDUM



City of Aurora

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To: Citizens' Water Advisory Committee

Through: Marshall P. Brown, Director, Aurora Water

From: Greg Baker, Manager of Public Relations, Aurora Water

Date: January 11, 2022

Subject: New commercial/industrial use approval system – Chandler Arizona

Purpose:

Balancing the impact of water development costs with the need to support continued economic growth has proven challenging as water availability becomes more constrained. Chandler, Arizona has developed a unique approval process for determining acceptable industries that require substantial water impacts. Staff would like to present on Chandler's methodology to see if CWAC would be willing to further investigate potential adoption of a similar system to prioritize future commercial and industrial water use based on economic value to the community.

Background:

Aurora Water has encouraged water efficiency by commercial and industrial users through a demand based water development fee (tap fee). As water availability in the arid west becomes less dependable due to climate change, staff are reviewing this fee to ensure that it properly recovering the cost of water service. At the Nov. 9, 2021 CWAC meeting, staff engaged the committee on the need to account for the impact of full consumption has one the utilities ability to recover for reuse.

Question:

Would the committee be willing to investigate and report out on the need for similar system of approval and prioritization of commercial and industrial water use?

cc: File copy

Attachments:

- NBC News article highlighting Chandler's approach to data centers
- PowerPoint presentation from Chandler staff to Arizona Municipal Water Users Association
- Chandler Tier I Water management memo
- Chandler revised ordinance regulating planning for current and future water resources

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Drought-stricken communities push back against data centers

[nbcnews.com/tech/internet/drought-stricken-communities-push-back-against-data-centers-n1271344](https://www.nbcnews.com/tech/internet/drought-stricken-communities-push-back-against-data-centers-n1271344)

June 19, 2021

As cash-strapped cities welcome Big Tech to build hundreds of million-dollar data centers in their backyards, critics question the environmental cost.



The Apple Data Center in Mesa, Ariz., in 2017. Jim Todd / Reuters file

June 19, 2021, 4:00 AM MDT

By [Olivia Solon](#)

On May 17, the City Council of Mesa, Arizona, approved the \$800 million development of an enormous data center -- a warehouse filled with computers storing all of the photos, documents and other information we store “in the cloud” -- on an arid plot of land in the eastern part of the city.

But keeping the rows of powerful computers inside the data center from overheating will require up to 1.25 million gallons of water each day, a price that Vice Mayor Jenn Duff believes is too high. “This has been the driest 12 months in 126 years,” she said, citing data

from the National Oceanic and Atmospheric Administration. “We are on red alert, and I think data centers are an irresponsible use of our water.”

Duff was the only Mesa City Council member to vote against the development. But she’s one of a growing number of people nationwide raising concerns about the proliferation of data centers, which guzzle electricity and water while creating relatively few jobs, particularly in drought-stricken parts of the United States.

The spike in use of data-intensive cloud services such as video conferencing tools, video streaming sites like Netflix and YouTube and online gaming, particularly as people quarantined during the pandemic, has increased demand for the computing power offered by data centers globally. And this means more data centers are being built every day by some of America’s largest technology companies, including Amazon, Microsoft and Google and used by millions of customers. According to the Synergy Research Group, there were about 600 “hyperscale” data centers, massive operations designed and operated by a single company that then rents access to cloud services, globally by the end of 2020. That’s double the number there were in 2015. Almost 40 percent of them are in the United States, and Amazon, Google and Microsoft account for more than half of the total.



The system used to cool servers inside the Apple Data Center in Mesa, Ariz. Tom Tingle / The Republic / USA Today Network

The U.S. also has at least 1,800 “colocation” data centers, warehouses filled with a variety of smaller companies’ server hardware that share the same cooling system, electricity and security, according to Data Center Map. They are typically smaller than hyperscale data

centers but, research has shown, more resource intensive as they maintain a variety of computer systems operating at different levels of efficiency.

Many data center operators are drawn to water-starved regions in the West, in part due to the availability of solar and wind energy. Researchers at Virginia Tech estimate that one-fifth of data centers draw water from moderately to highly stressed watersheds, mostly in the Western United States, according to a paper published in April.

Typically, where data centers are located is based on proximity to customers and infrastructure, the cost of land, the tax incentives offered by local governments and access to low-cost electricity, the researchers said.

“I am not sure the degree to which environmental considerations are in the decision-making process,” said Landon Marston, lead author of the paper.

All centers need some form of cooling technology, typically either computer room air-conditioning systems -- essentially large units that cool air with water or refrigerant -- or evaporative cooling, which evaporates water to cool the air. Evaporative cooling uses a lot less electricity, but more water. Since water is cheaper than electricity, data centers tend to opt for the more water-intensive approach.

The growth in the industry shows no signs of slowing. The research company Gartner predicts that spending on global data center infrastructure will reach \$200 billion this year, an increase of 6 percent from 2020, followed by 3-4 percent annually over the next three years. This growth comes at a time of record temperatures and drought in the United States, particularly in the West.



A data center run by Switch in the desert east of Reno, Nev., in 2018. Jason Henry / The New York Times / Redux Pictures

“The typical data center uses about 3-5 million gallons of water per day -- the same amount of water as a city of 30,000-50,000 people,” said Venkatesh Uddameri, professor and director of the Water Resources Center at Texas Tech University.

Although these data centers have become much more energy and water efficient over the last decade, and don’t use as much water as other industries such as agriculture, this level of water use can still create potential competition with local communities over the water supply in areas where water is scarce, he added.

But some tech companies like Google say they are trying to address their water use.

“As part of our water stewardship efforts, we’re working to utilize water more efficiently and exploring ways to incorporate circularity,” said Gary Demasi, senior director of energy and location operations at Google. “We have a site-specific approach where we work within the constraints of the local hydrological environment to find the best solutions.”

He added that “many arid environments provide an abundant supply of carbon-free solar and wind energy,” which explains why data centers are drawn to those areas.

Sergio Loureiro, vice president of core operations for Microsoft, said that the company has pledged to be “water positive” by 2030, which means it plans to replenish more water than it consumes globally. This includes reducing the company’s water use and investing in community replenishment and conservation projects near where it builds facilities.

Amazon did not respond to requests for comment.

Local concerns

In recent years, tensions over water use by data centers have flared in communities across the United States. In 2017, conservation groups in South Carolina criticized Google over its request for a permit to draw 1.5 millions of gallons of water per day from a depleted aquifer to cool its expanding data center in Goose Creek. The facility already required 4 million gallons of tap water each day, and residents and conservation groups were concerned about the company's impact on the dwindling groundwater supply. After a two-year battle with the South Carolina Coastal Conservation league over the plans, Google reached an agreement to use only groundwater under limited conditions, for example, during maintenance work or as a backup during drier months, and instead pay for an alternative source of surface water from the Charleston Water System.

Google spokeswoman Mara Harris said that the company partnered with local community stakeholders and water conservation experts to assess the data center's impact and conducted studies that showed that even in an "extreme worst-case scenario" the data center's water use in the area would be sustainable.

Both companies and consumers need to start treating water conservation as seriously as reducing carbon emissions, experts say.

"We are going to experience a drier and more water-scarce future, and every drop of water counts," said Newsha Ajami, director of urban water policy at Stanford's Woods Institute for the Environment. "It's not just Amazon, Microsoft and Google causing these water footprints. But it's you and me, searching and needing data that ends up in these data centers."

Recommended

Ajami said that water has been historically undervalued as a resource in part because it has been cheap for companies to purchase. While many industries have taken great leaps in reducing their electricity use and carbon footprints, they lag behind in water efficiency throughout their supply chains, she said.

"We often overlook the communities impacted, who are often disadvantaged," she added. "If it was a wealthy community, maybe they wouldn't allow the data centers to be built in their backyard."

Jobs versus water

Water conservation experts say that a key challenge has been the lack of alignment between cities' economic development plans and their resource conservation efforts. Often the promise of attracting a household-name technology company to build a billion-dollar data

center that will bring jobs and investment to the region will override concerns over the water supply.



Servers at the Apple Data Center in Mesa, Ariz. Tom Tingle / The Republic / USA Today Network

“Cities don’t want to tell tech companies that they can’t come to their city because of lack of water,” said Cora Kammeyer, a senior researcher with the Pacific Institute, a nonprofit research organization that focuses on water conservation.

Duff, the Mesa vice mayor, agrees.

“When it comes to economic development, I don’t think we are fully transparent about the water concerns,” she said. “We want to keep the image that we are a great place to invest and start a business. But we don’t like to talk about the water.” The Mesa project approved on May 17, which was submitted under the name of a developer called Redale LLC, has been shrouded in secrecy. The name of the company that will run the data center has only been supplied to the city under a nondisclosure agreement, although one Mesa city source, who was not authorized to speak publicly about the deal and spoke on the condition of anonymity, said it was Facebook. The specialist news site [Data Center Dynamics](#) also reported that it was likely to be Facebook based on similarities in the planning specifications to its other data centers. Facebook declined to comment, and Redale did not respond to a request for comment. The proposed data center will employ an estimated 150 people across three buildings and pay the city millions of dollars in sales tax on the construction and utilities.

Duff added that even though data centers don’t use as much water as other industries, they are “still depleting water in the desert, and that is a concern.”

She noted that this is the “eighth or ninth” data center project in Mesa. The city previously approved a Google facility, currently under construction, that will consume up to 4 million gallons of water per day, as reported by Bloomberg. The Redale project represents a significant milestone to Mesa’s water supply as it’s the first where the city required the developer to obtain water credits from the Salt River Project to use groundwater in the event that the city can’t meet the data center’s demand for water.

“It’s the only way we could say we had enough water for the business,” Duff said.

Surface water supplies that Arizona uses from Lake Mead, America’s largest reservoir, and the Colorado River that feeds it, have already dwindled to their lowest levels ever, according to the Bureau of Reclamation, a federal water management agency. The water level is so low that federal restrictions are likely to be triggered on Arizona’s water allocation from the reservoir, which could happen at the start of 2022. Six other states in the West could also face such restrictions.

As that happens, Duff said, more companies will start to draw on their “water credits” to use groundwater supplies. However, according to research by Arizona State University, these water credits are over allocated, meaning that if everybody started using them at the same time, there wouldn’t be enough water to go around.

“We are very resourceful, but I think we need to wake up,” Duff said. “The analysis shows our safeguards aren’t there and we need to come up with a concrete plan instead of a hope and a prayer.”

Pushing back

To the south of Mesa, the city of Chandler, Arizona, has taken a different approach. In 2015 the city passed an ordinance that restricted new water-intensive businesses from developing unless they aligned with the city’s plan for economic development. It effectively deters businesses that use a lot of water but don’t create many jobs, including data centers, in favor of those that create thousands of jobs, such as semiconductor plants.

The city’s water resource manager, Gregg Capps, said the ordinance, the first of its kind in the U.S., was introduced as a direct result of discovering in 2013 how much water one of the data centers in the city was using after the company started requesting additional water connections. “We didn’t know a whole lot about them back then, but that brought our attention to their water use,” he said.

His team took their concerns to the City Council, which spent months developing the ordinance. Since it was adopted in 2015, there have been no new data center developments in Chandler.

“Water is a strategic resource. It’s important to us,” Capps said.

Cool innovations

The Silicon Valley technology companies that dominate the hyperscale data center market -- Amazon, Google and Microsoft -- are conscious of the business and reputational risk associated with data centers' thirst. All of them have made some progress in reducing their data centers' water footprint through innovative cooling strategies. These include free-air cooling, which uses fresh outdoor air to cool a space, and immersion cooling, where servers are submerged in a liquid that boils at a lower temperature than water, taking the heat with it. However, free-air cooling only really works in cooler climates, and immersion was just used for the first time in a commercial setting by Microsoft in April.

Some companies, including Microsoft have developed underwater or partially submerged data centers that rely on large bodies of already cool water to disperse heat.

Google's Demasi said that the company cooled its data centers using seawater in Finland, industrial canal water in Belgium and recycled wastewater in the United States, at its site in Douglas County, Georgia.

Switching over to new technologies can be extremely costly, and data center operators are more likely to wait until the end of the lifecycle of the existing equipment than retrofit cooling systems, said Todd Boucher, founder of the data center design firm Leading Edge Design Group.

Future generations

In Mesa, Duff is thinking about the legacy of the decisions her city, and others, are making about water now. "I am 61 years old, and I know that in whatever lifetime I have left I will not see the total impact of what we are doing today," she said. "But our children and their children will, and we have to take responsibility for that." "I hope the next generation does not look back at ours and say, 'What were you thinking?'" she said. "I'd like to think we saw the warnings and started taking aggressive measures in order to preserve our planet and our lives."

Olivia Solon is tech investigations editor for NBC News in San Francisco.



Sustainable Water Allocation One City's Solution

Gregg Capps
Utility Resources Manager
gregg.capps@chandleraz.gov | 480-782-3585

Sustainable Water Allocation

- Need to Allocate Water Resources
- Process Used to Develop a Water Allocation Policy
- Overview of the Policy
- Managing the Policy

For all the details read Chandler City Code: [Article VI. 52 - Sustainable Water Allocation Regulations](#)

Chandler Facts

- 265,000 current population - 71.5 square miles –
- City owns and operates
 - Potable Water System
 - Waste Water Treatment System
 - Reclaimed Water System



Chandler Facts

Water

- Finite Supply (73% committed)
- Surface water, Groundwater, Reclaimed water
- Assured Water Supply Requirements

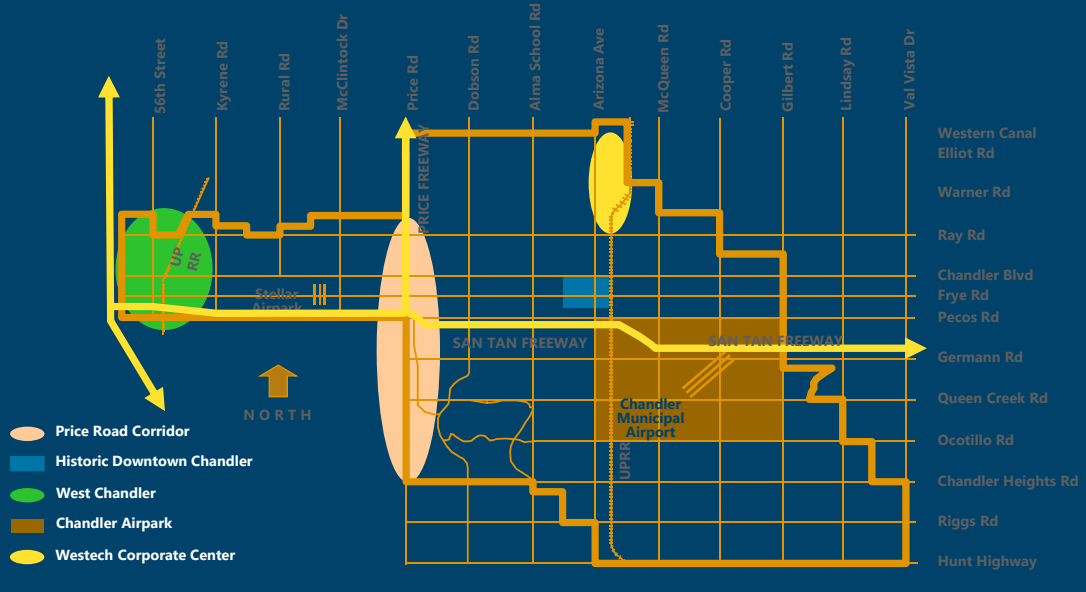


Land

- Finite Supply (85% of land is developed)
- Un-developed land
 - 29% Residential
 - 71% Non-Residential (Employment Centers)



Key Employment Centers



How Did The Water Allocation Policy Begin?

- September 2013 – Meeting with City Council
 - City’s water operations and resources discussion
 - Concerns about new high volume water voiced
 - City code does not specifically prevent new water connections
 - Council direction to develop a water allocation policy
- May 2015 – Water allocation ordinance adopted



Water Policy Development Critical Components

- Talk and **LISTEN** to
 - Land Planners
 - Permit Reviewers
 - Economic Development
 - Legal Department
- Understand the development process

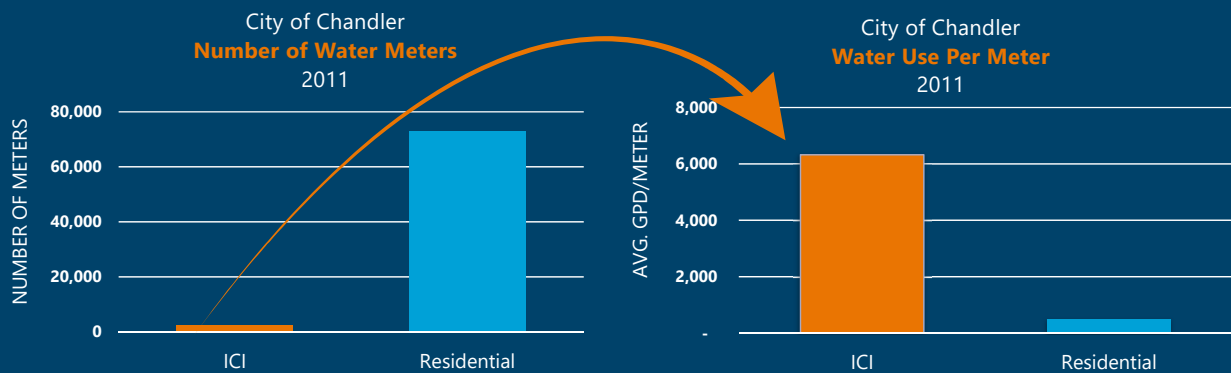


Concept: Allocate Water Using The Water Meters

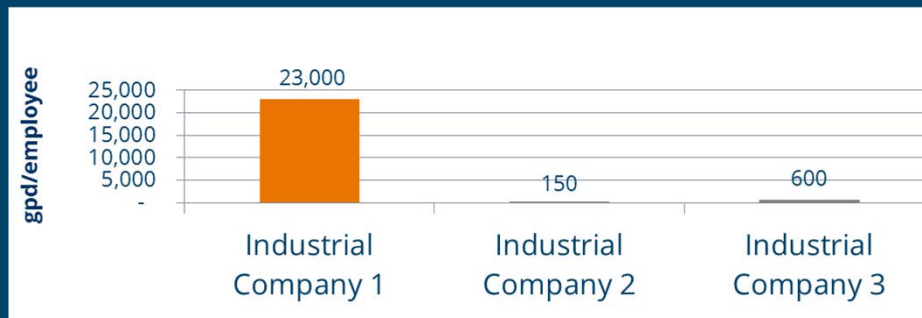
- Several paths to get project approved.
- Only “hard stop” in development process. Every new development must apply for water meter.
- Which new water meters should be regulated?

What Did The Existing Data Tell Us?

- A small group uses most of the water
- Industrial meters can use lots of water



Example: Water Use Per Job/Employee



Water Allocation Policy Framework

New policy excludes:

- Existing customers
- All residential meters (SFR and Multi-family)

New policy manages:

- New large volume water users (3-inch or larger meters)
- New multiple water meters on one parcel (combined use of more than 50,000 gpd)
- Allocates water using a tiered method



Collaborative Effort

Outreach

- 9 meetings with commercial, industrial, multi-family developers, data center developers, existing large industrial user

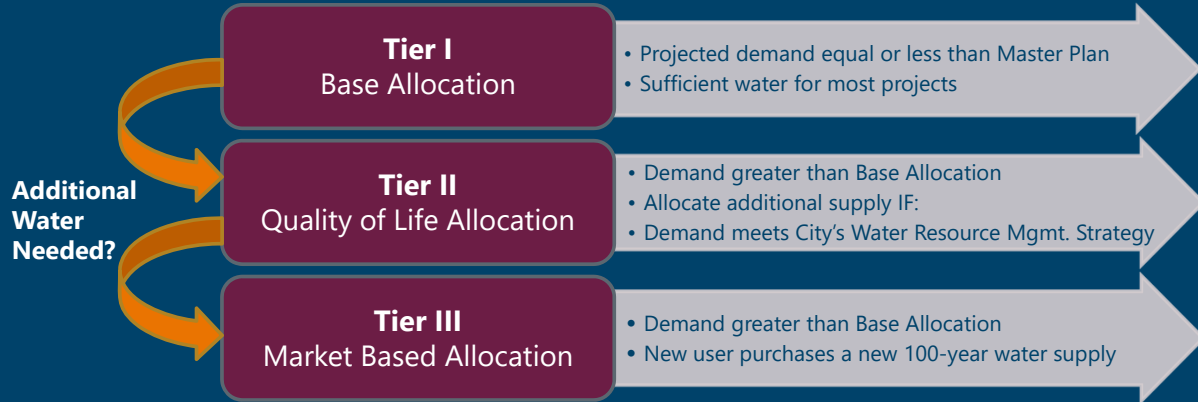
Stakeholders

- Intel, Basha's, Snell & Wilmer, Grady Gammage, Valley Partnership, Southwest Value Partners

Staff

- City Manager's Office
- Economic Development
- Law
- Planning
- Permit Review

Water Allocation Tiers



Water Allocation Policy Tier I Allocation

Approved Tier I (base) Allocations

Term (s)	City Ordinance Reference	Tier I Water Use Rate
Office, industrial/warehouse	38-3	115 gallons per day per 1,000 square feet gross floor area
Retail/commercial	38-3	200 gallons per day per 1,000 square feet gross floor area
Hotel	35-200	356.5 gallons per day per guest room
Privately owned recreational facilities	38-3	500 gallons per day per 1,000 square feet gross floor area

Water Allocation Policy Tier II Allocation

Council Water Resource
Management Strategy

- Economic Development
- Downtown Re-Development
- North Central Chandler Re-Development
- Revitalizing Neighborhoods

Approval Process:

- Submit Water Service Application
- Director and City Manager approves Tier II
- Water Service Agreement approved by Council



Water Allocation Policy Tier III Allocation

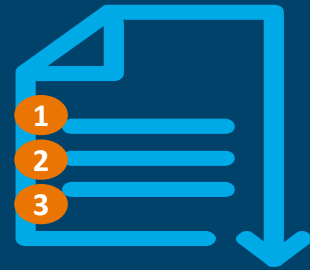
Approval Process:

- Submit Water Service Application
- Director and City Manager determines use is not eligible for Tier II water
- Water Service Agreement to identify demand, supplies acquired and other conditions tied to the development
- Water Service Agreement approved by Council



Policy Administration – Enforcement

- Sign Sustainable Water Service Agreement
- Over water use penalties (3-year rolling average)
 - First time – pays for excess water use (storage credits)
 - Second time - water reduction plan
 - Third time – legal action



Consequences of Water Allocation Policy

- Linked Water Planning to City's Strategic Goals
- Better coordination among City departments
- Developers understand policy requirements early in the process



Take Home (Lessons learned)

- Align with City development goals
- Communication is a must
- Limit the impact to a few users
- Develop the policy early
 - Available land and water is finite

More Information, please follow these links: <http://www.chandleraz.gov>

Chandler Ordinance and City Code:
Article VI. 52 - Sustainable Water Allocation Regulations

Or contact: gregg.capps@chandleraz.gov



Questions

Sustainable Water Allocation One City's Solution



#16

MAY 14 2015



Chandler • Arizona
Where Values Make The Difference

MEMORANDUM Municipal Utilities – Memo No. MUA15-074

DATE: MAY 11, 2015

TO: MAYOR AND COUNCIL

THRU: RICH DLUGAS, CITY MANAGER *RD*
 NACHIE MARQUEZ, ASSISTANT CITY MANAGER *NM*
 DAVE SIEGEL, MUNICIPAL UTILITIES DIRECTOR *DS*

FROM: DOUG TOY, WATER REGULATORY AFFAIRS MANAGER *DT*

SUBJECT: ACCEPTANCE OF THE TIER I WATER ALLOTMENTS AND THE WATER RESOURCE MANAGEMENT STRATEGY

RECOMMENDATION:
 Staff recommends City Council accept the Tier I Water Allotments and the Water Resource Management Strategy.

BACKGROUND AND DISCUSSION:
 To ensure there is a sustainable water supply for current and future water users, the City must carefully manage its remaining water supplies. Chandler has planned and managed its water resources for build-out conditions since the early 1980's and recently completed a Water Demand update. This update projected that the City has sufficient supplies to meet its build-out demands if:

- Future demands are proactively managed,
- Future commercial and industrial demands reflect today's planning expectations, and
- New high volume users are evaluated to ensure the City receives the most benefits possible for a large water allocation.

Ordinance No. 4634, amending Chapter 52 of the Chandler City Code to provide authority for the City to allocate water to non-residential uses, is also scheduled for this Council meeting. Once adopted by Council, new Sustainable Water Allocation Regulations (Article IV, Chapter 52 of the City Code) will assist the City manage its remaining water supplies. The new water allocation ordinance applies to only non-residential uses. Chandler already has several programs to manage residential and landscape water use. The new adopted ordinance allocates potable water resources on a three tier basis to non-residential users. Tier I water is the base allocation and is available for all Chandler water users. It is expected that the

Tier I water allotment will meet 99% of all new water user's needs. If additional water is needed beyond the Tier I water allotment, the City could allocate Tier II or Tier III water.

It is expected some new projects will require more water than the Tier I water allotment. Tier II water could be used to satisfy those needs per the Water Resource Management Strategy, as presented in Attachment 2. The Water Resource Management Strategy sets the framework of Tier II water allotment for Council determined priorities, such as Economic Development, Neighborhoods, Revitalizing Downtown, and Revitalizing North Central Chandler.

In addition, if a development requires more water than allocated by Tier I and II, Tier III water can be purchased by the end user. Tier III water acquisition fees will be market-based.

FINANCIAL IMPLICATIONS: Not applicable.

PROPOSED MOTION:

Move City Council accept the Tier I Water Allotments and the Water Resource Management Strategy.

Attachments: Tier I Water Allotments
Water Resource Management Strategy

Attachment 1
Tier I Water Allotments

Tier I Water Allotments Non-Residential Water Uses May 11, 2015		
Term (s)	City Ordinance Reference	Tier I Water Allotments
Office, Industrial/ warehouse	38-3	115 gallons per day per 1,000 square feet GFA**
Retail/ commercial	38-3	200 gallons per day per 1,000 square feet GFA*
Hotel	35-200	356.5 gallons per day per guest room
Library facilities, Park facilities, Police facilities, Public or quasi-public, Public school	38-3	500 gallons per day per 1,000 square feet GFA*

*GFA: Gross Floor Area as defined by City Ordinance 38-3

Introduction

Like all municipal water providers in Arizona, Chandler has finite water resources. Water is a natural resource necessary for any vibrant city. Chandler's Water Resource Management Strategy ensures sufficient water for current and future water customers.

Potable Water Allocation Strategy Framework

Chandler has secured water supplies to meet its build-out needs which are identified in the 2014 Water Demand Update. Chandler is revising its City Code to include a new section that allocates potable water resources to non-residential uses on a three tier basis. The new City Code section is entitled the "Sustainable Water Allocation Regulations". Chandler already has several programs to manage residential water use, and the new water allocation code applies only to non-residential uses. Tier I water is the base allocation and is available for all Chandler water users. It is expected that the Tier I water allotment will be sufficient to meet 99% of all new users' water needs. If additional water is needed beyond the Tier I water allotment, the City could allocate Tier II or Tier III water. All three tiers are linked to a specific water meter and cannot be transferred or joined with another user unless approved by the City.

Sufficient water, from Tier I, has been set aside for non-residential uses. Tier I non-residential water use is based on building floor area. Tier I Water Allotments are presented in the May 11, 2015 memo to Mayor and Council.

It is expected some new non-residential projects will require more water than the Tier I water allotment. Tier II water could be used to satisfy those needs beyond Tier I water. Tier II water will be allocated utilizing the Council-approved Water Resource Management Strategy. Finally, if a development requires more water than allocated by Tier I and II, Tier III can be purchased by the end user. Tier III water acquisition fees will be market-based.

Interaction with Land Use Entitlements

Upon implementation of the Sustainable Water Allocation Regulations (Article IV, Chapter 52 of the City Code), new development will be limited to no more than the Tier I Water Allotments associated with the approved land uses, or have a Sustainable Water Services Agreement that outlines the approved Tier II or Tier III water the City will make available.

Chandler's Strategic Goals

Creating a vibrant sustainable city is a goal supported by the many decisions the City makes. To create a vibrant sustainable city, the following three areas were identified that could be eligible for Tier II water:

1. Economic Development
2. Neighborhoods
3. Downtown and North Central Chandler

The Water Resource Management Strategy aligns future Tier II water allotments with three vibrant sustainable City goals. The following concepts are considered when allocating Tier II water:

1. Economic Development - This goal is primarily related to attracting new technology and knowledge-based industries and encouraging the expansion of existing businesses, particularly the creation of additional high-wage jobs. The Sustainable Water Resource Regulations provides water supplies for all existing businesses, vacant buildings, and undeveloped sites. For new undeveloped sites and existing or vacant building requiring new or additional water meters, Tier I water is allocated based on the building size and the type of use. In nearly all cases, Tier I water supplies will meet the needs of the user of the building. If a new or expanding business needs additional water beyond the Tier I Water Allotments, the City will determine the economic benefit provided by the user. The City, at its discretion, may allocate additional Tier II water supplies that are commensurate with the economic benefits provided.
2. Neighborhoods - This goal encourages the reuse or adaptive reuse of underutilized buildings in existing neighborhoods. Again, there is sufficient Tier I water to satisfy the demands of similar replacement buildings. The City, at its discretion, may allocate additional Tier II water supplies to support the reuse of existing buildings, commensurate with the neighborhood and economic benefits provided.
3. Downtown and North Central Chandler – Revitalization relates to the expansion of residential, employment, entertainment, and educational opportunities in and near the downtown/north central Chandler area. In addition, new mass transit may be introduced along Arizona Avenue. Increasing the transit system supports redevelopment or reuse of existing sites along this major arterial street. The Sustainable Water Allocation Regulations provides sufficient Tier I water for increased densities, transit-oriented development, and the revitalization of downtown/north central Chandler. Sufficient levels of Tier I water have been allocated for current and planned residential and non-residential users in these two areas. The City, at its discretion, may allocate additional Tier II water supplies to desirable improvement/revitalization projects. The City, at its discretion, may allocate additional Tier II water supplies to support developments that will increase opportunities for improved transportation and transit options.

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ORDINANCE NO. 4634

AN ORDINANCE OF THE CITY OF CHANDLER, ARIZONA,
AMENDING CHAPTER 52 OF THE CHANDLER CITY CODE
BY ADDING ARTICLE VI PROVIDING REGULATIONS FOR
PLANNING FOR CURRENT AND FUTURE POTABLE
WATER RESEOURCES

The Mayor and City Council hereby amend Chapter 52 of the Chandler City Code by adding Article VI, entitled Sustainable Water Allocation Regulations to Chapter 52 of the Chandler City Code (hereinafter the "Code"), as follows:

Article VI. Sustainable Water Allocation Regulations

52-43. Policy Established.

- A. Chandler has finite water resources.
- B. This water allocation policy implemented in this Article will assist the City in maintaining a sustainable water supply for existing and future water users.

52-44. Definitions

- A. "Allocate" or "Allocation" shall mean the City's act(s) of enumeration of Water it owns or may own in the future for delivery in its Water system for current and future water customers. Allocation of Water under this Article VI does not convey any rights to others for the use of, ownership, or reservation of such Water to any particular customer being served or potentially to be served by the City's Water system.
- B. "Applicant" shall mean the owner, or owner's agent, who applies for Development Entitlements pursuant to this Code, including, but not limited to, Chapters 35 and 48.
- C. "Development Entitlements" shall mean approvals by the City of Chandler to authorize applications, under applicable municipal code provisions, including, but not limited to, Chapters 35 and 48, for development, construction and/or installation of improvements on specified property.
- D. Multiple and Large Meter Users or "MLM Users" shall mean water uses, excluding water meters used solely for residential land use (as defined in Chandler City Code § 38-3), landscape water and reclaimed water meters, which:
 - 1. Use more water than the Tier I Water Use Allocation,
 - 2. Use water sufficient to require installation of a 3-inch or greater meter or its equivalent in multiple meters,
 - 3. Require multiple meters on a single parcel that will use more than 50,000 gallons per day (annual average), or
 - 4. Require one or more new meters on a parcel that already has water service and the water use on the parcel is more than 50,000 gallons per day (annual average).

E. Tier I Water Use Allocation shall mean the most recently City Council accepted allocations of water usage assigned to various residential uses as gallons per day (gpd) per dwelling unit and gallons per day (gpd) per 1000 square feet of structures developed as non-residential uses. Tier I Water Use Allocations may be periodically updated by the City Council.

F. Tier II Water shall mean Water that may be available for allocation based on the Water Resource Management Strategy to a MLM User.

G. Tier III Water shall mean Water that may be available for purchase at a price determined by the City to a MLM User.

H. “Water” shall mean potable water as defined by the federal Clean Water Act.

I. Water Resource Management Strategy shall mean the periodic report accepted by the City Council which outlines the City’s development goals, types of land uses to be encouraged by the City’s provision of Tier II Water, and the criteria to be considered by City staff, commissions, and City Council in the potential allocation of Tier II Water to MLM Users who may meet the criteria.

52-45 Applicability

A. The Water usage of all Water users, other than MLM Users who are approved in accordance with Subsection 52-45(B), are limited to the then-existing Tier I Water Allocation accepted by the City Council in accordance with Subsection 52-44(E).

B. MLM Users may only exceed the Tier I Water Allocation then existing at the time of Development Entitlements becoming effective, if the City, in its sole discretion, specifically grants Tier II Water or Tier III Water Use Allocations in accordance with this Article and through a Sustainable Water Service Agreement approved by the City Council and executed by the applicant.

52-46 Sustainable Water Service Application

A. All MLM Users shall submit a Sustainable Water Service Application at the same time as it submits its applications for any Development Entitlements.

B. The Sustainable Water Service Application shall identify the type of Water use, the size of the structures in the development, annual and monthly Water use, and the phasing of development.

52-47 City Review of Sustainable Water Service Applications

A. The Municipal Utilities Director shall review and may approve Sustainable Water Service Application.

B. Tier II and Tier III Water Allocations Determination.

- 1.** The City will determine whether, based on the most recent Water Resource Management Strategy, the development is eligible for Tier II Water and how much it is willing to apply to the development.
- 2.** If the City determines that it will not make Tier II Water available for any particular MLM User, the MLM User must purchase Tier III Water, if available, in order to continue with the application for land use entitlements for its planned development.

C. Prior to installing any water meters for a MLM User, City and water user shall enter into a Sustainable Water Service Agreement. Concepts in the Sustainable Water Agreement include:

1. Valid for 100-years from the date of issuance.
2. Determine the approved MLM User’s Water Use Allocation that will be permitted for the property subject to the Sustainable Water Service Agreement.
3. Transferrable to subsequent owners of the real property underlying the development with equivalent water use upon City approval.
4. Terms and conditions for the purchase of Water resources necessary for delivery to the development.
5. Other terms and conditions deemed necessary for City to agree to the allocation of Tier II or Tier III Water to the development.

52-48 Penalties for exceeding the Annual Sustainable Water Use allotment

- A. Annual compliance shall be based a rolling 3-year average water use.
1. First exceedance – Pay for volume of water used. City will purchase water credits at market rate and charge back to water meter owner.
 2. Second exceedance – Water user must develop a water reduction plan.
 3. Third exceedance – Court action.

INTRODUCED AND TENTATIVELY APPROVED by the City Council this ____ day of _____, 2015.

ATTEST:

CITY CLERK

MAYOR

PASSED AND ADOPTED by the City Council this ____ day of _____, 2015.

ATTEST:

CITY CLERK

MAYOR

CERTIFICATION

I, HEREBY CERTIFY, that the above and foregoing Ordinance No 4634 was duly passed and adopted by the City Council of the City of Chandler, Arizona, at a regular meeting held on the ____ day of _____, 2015, and that a quorum was present thereat.

CITY CLERK

APPROVED AS TO FORM:

CITY ATTORNEY (*kb*)

PUBLISHED:

CITIZENS' WATER ADVISORY COMMITTEE (CWAC) - ATTENDANCE RECORD

CWAC - 2021	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	TOTAL
Janet Marlow - Chair	1	1		1	1	1	1	1		1	1		9
Angie Binder - Vice-Chair	1	1		1	1	1	1	1		1	1		9
Jay Campbell - Comm. Rate Payor Member	A	1		1	1	A	1	A		1	A		5
Tom Coker	1	1		1	A	A	1	1		1	1		7
Brandy DeLange	N/M	N/M		1	1	A	1	1		N/M	N/M		4
Richard Eason	1	1		1	1	1	1	1		1	1		9
William Gondrez	1	1		1	1	1	1	1		1	1		9
David Patterson	1	1		1	1	A	A	A		1	1		6
Mike Spatter	N/M	N/M		1	1	1	A	1		N/M	N/M		4

1 = PRESENT

A = ABSENT-Excused

U = ABSENT-Unexcused

N/A = NO MEETING

N/M = EITHER NO LONGER A MEMBER or NOT YET A MEMBER

N/Q = No Quorum, Meeting Cancelled

T = Teleconference or Webex

*** = Not a formal meeting (orientation, new member applicant interviews, etc.)**

NOTE: Notation in **RED** indicates Member did not RSVP when required
(required for quorum & food ordering purposes)

Months highlighted in **GRAY** were not regular public meetings

STAFF LIASON: Greg Baker, Manager of Aurora Water Public Relations

SUPPORT STAFF: Leana Baker, Administrative Specialist