



Exploring Xeriscape & Soil Amendment Code Changes

To Promote Efficient Water Use and Healthy Landscapes

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Project: Explore xeriscape and soil amendment code updates that support long-term water use reduction



- Greatest water-saving opportunities: outdoor uses (~40% of total annual water use)
- Resilient landscapes: less impacted by rising temperatures and water shortages (e.g., Colorado River Basin)
- Similar measures along the Front Range:
 - Town of Castle Rock
 - City of Aurora
- City Council identified priorities (2021-2023)

Council Priorities

Priority 14. Effective soil amendment policies and compliance (water usage)

Priority 19. Xeriscape – Increase rebates and education, less green lawns with new development

A. What feedback does Council have regarding the four proposed opportunities?

1. Less turf in new development and redevelopment (three options)
2. Allow synthetic turf in some scenarios
3. Expand irrigation standards and residential equipment efficiency
4. Increase flexibility in soil amendment policy

B. What additional information is needed?

Definitions

1. **Residential** – single-family detached homes, duplexes
2. **Commercial** – multi-family properties (e.g., apartments), businesses, HOA common spaces, etc.
3. **Turf** – area of grass with a water requirement greater than 15 gallons/square foot/year
4. **Soil Amendment** – any material added to soil to improve its physical properties and conditions for plant growth; can also reduce water use



What's Xeriscape?

Sustainable, thoughtful landscape design; water-wise landscaping; based on sound horticultural principles.

1. Plan
- 2. Improve soil**
- 3. Irrigate efficiently**
- 4. Use turf wisely**
5. Select appropriate plants
6. Mulch
7. Maintain



Xeriscape, NOT Zeroscape



Codes



- Landscape standards for commercial; none for residential
- Synthetic turf restricted
- Soil amendment
 - 3 cubic yards / 1,000 square feet, tilled in
 - Certified

Incentives



- Xeriscape Incentive Program (XIP)
 - Fort Collins Utilities only
- Financial incentives to use less water

Education



- Annual Xeriscape Garden Party
- Sprinkler Checkup program
- Garden in a Box
- Xeriscape Incentive Program

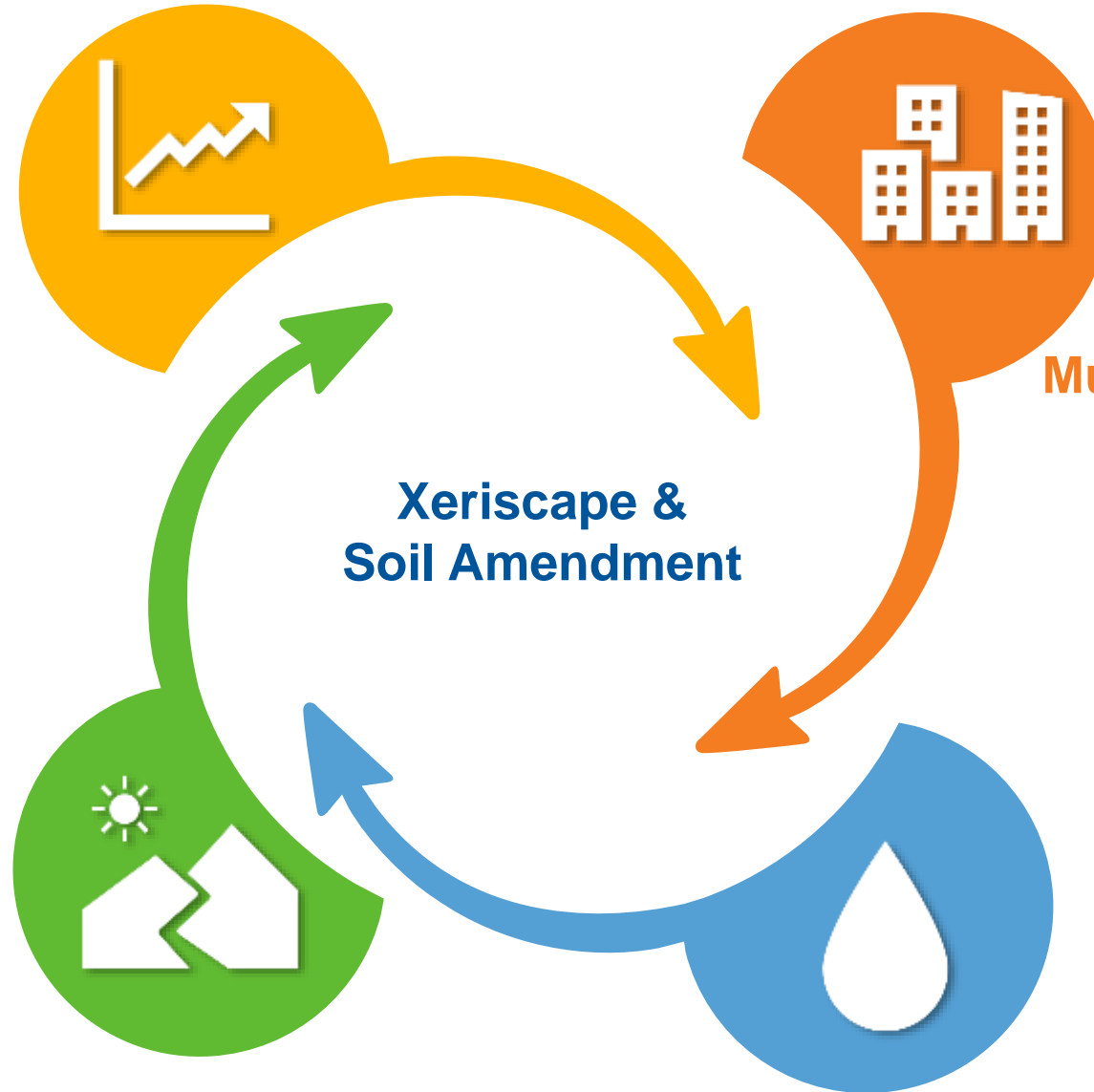
Council Priority

City Strategic Plan

Fort Collins Utilities Strategic Plan

Colorado Water Plan

Urban Forest Strategic Plan (Future)



City Plan

Our Climate Future

Housing Strategic Plan

Municipal Sustainability and Adaptation Plan

Land Use Code

Water Supply & Demand Management Policy

Water Efficiency Plan

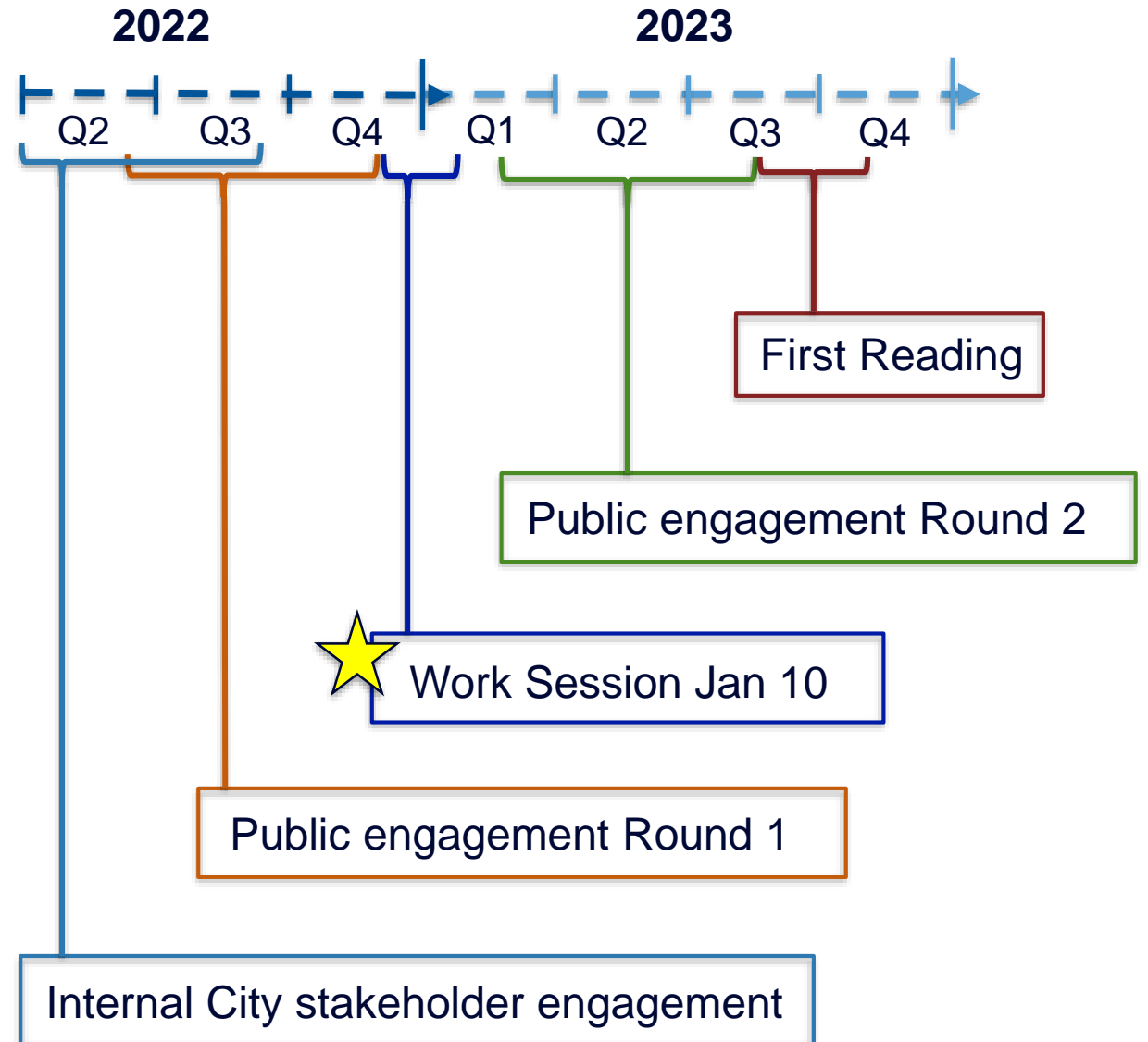


Opportunities

Xeriscape & Soil Amendment

Opportunities were developed based upon:

- Public engagement
- Alignment with other departments
- Best practice report by consultant
- Estimated water savings analysis
- Peer communities



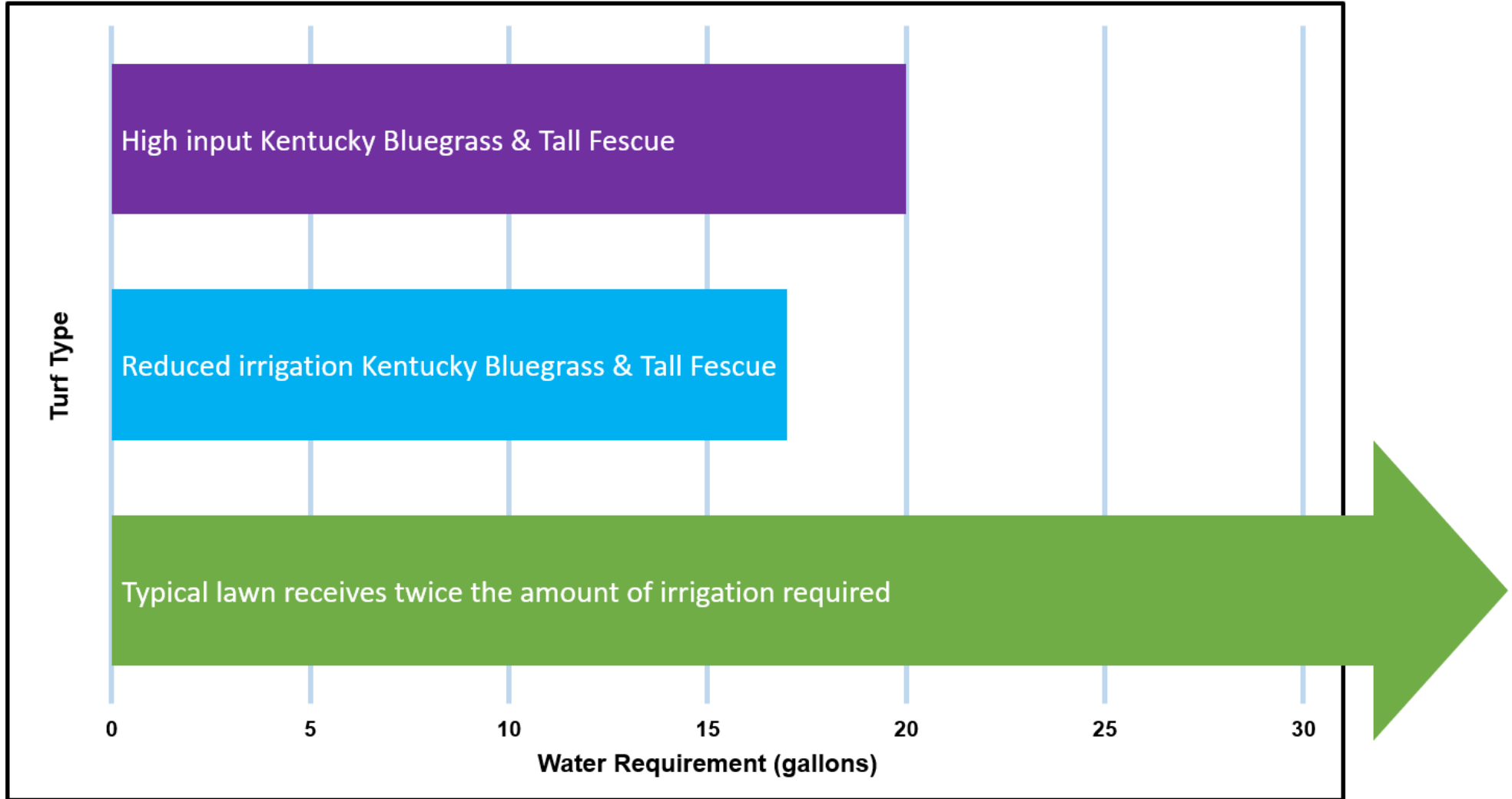
Four Opportunities to Consider:

1. Less turf in new development and redevelopment (three options)
2. Allow synthetic turf in some scenarios
3. Expand irrigation standards and residential equipment efficiency
4. Increase flexibility in soil amendment policy





1: Less turf in new development
and redevelopment

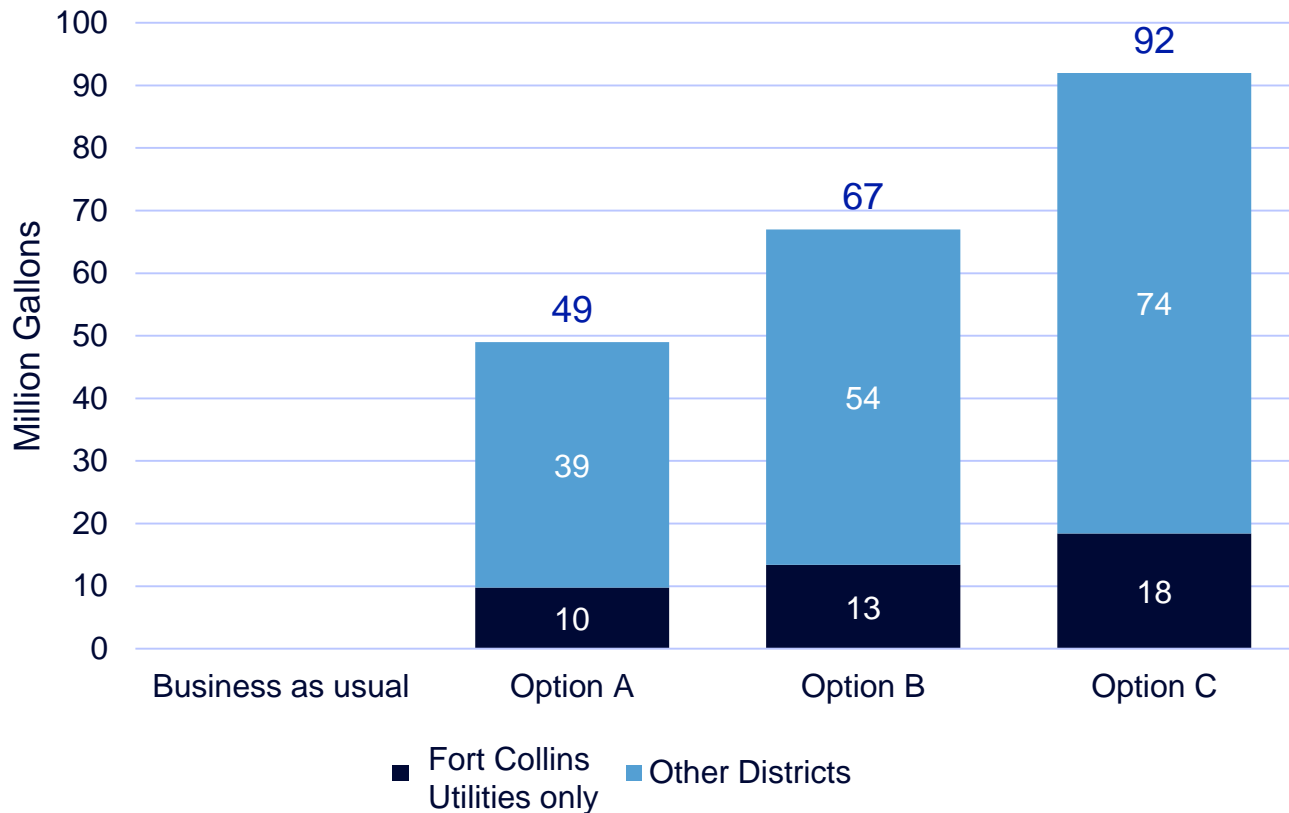


Adapted from CSU Extension



	Existing	Option A	Option B	Option C
Turf limit – front yard including parkway	No limit	50% maximum	30% maximum	0% maximum
Average annual front yard water need	18,000 gallons	12,500 gallons	10,600 gallons	7,750 gallons
Percentage of total household water use	22%	16%	14%	11%

Estimated Water Savings at GMA Build-Out Compared to Existing Residential Average



	Single Family + Duplex Dwelling Units (#)	Estimated Landscape Area (acres)
Fort Collins Utilities Service Area (20% of New Development)	1,800	41
Other Water Districts (80% of New Development)	7,200	165
TOTAL	9,000	206

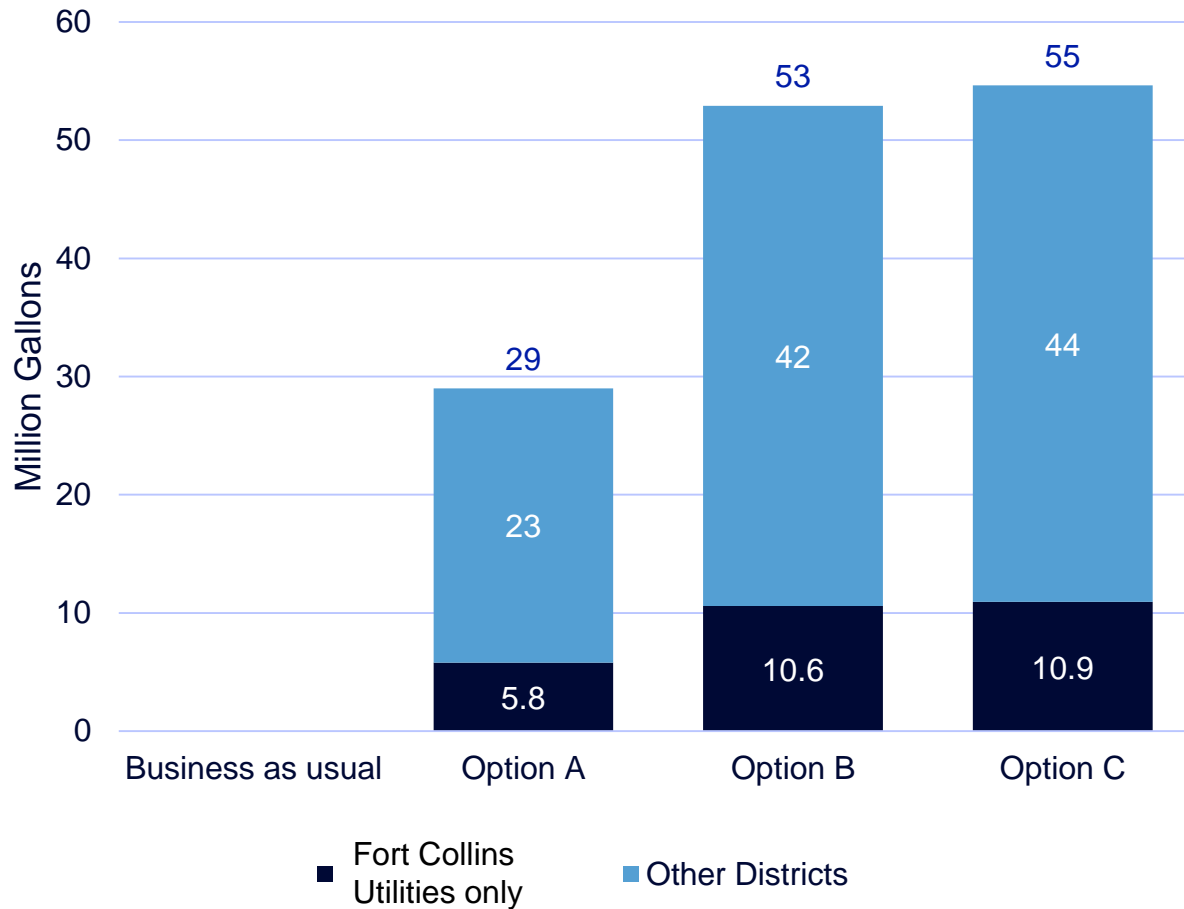
Assumptions

1. Front yard including parkway = 1,000 sq ft
2. Areas of non-turf are an average of very low to moderate water use
3. 50% plant coverage needed



	Existing	Option A	Option B	Option C
Turf limit – total property	60% maximum	60% maximum, up to 10,000 sq ft	30% maximum, up to 10,000 sq ft	15% maximum, up to 10,000 sq ft
% water savings over existing	-	22%	40%	42%
Estimated annual customer savings	-	\$0 – \$643	\$20 – \$1,100	\$30 – \$1,300

Estimated Water Savings at GMA Build-Out Compared to Current Average, Multi-Family



	Multi-Family Dwelling Units (#)	Estimated Landscape Area (acres)
Fort Collins Utilities Service Area (20% of New Development)	4,200	41
Other Water Districts (80% of New Development)	16,800	163
TOTAL	21,000	204

Assumptions

1. 20% of property is landscaped
2. Estimated landscape area based on average size of existing multi-family properties



2: Allow synthetic turf in some scenarios

Advantages

- Low water requirement
- Reduced chemical inputs (i.e. pesticide, fertilizer)

72% of survey respondents think synthetic turf should be allowed to some degree



Disadvantages

- Average lifespan of 7-10 years
- Negative soil and tree impacts
- High heat index
- Increases stormwater runoff
- Contains PFAS
- Microplastic pollution and significant plastic waste

Residential

- Allowed in front yards with a permit
- Trees must have dedicated irrigation
- Plan must meet high-quality installation specifications



Commercial

- Allowed on case-by-case. Examples include year-round, high-traffic areas.
- Trees must have dedicated irrigation
- Plan must meet high-quality installation specifications





3: Expand irrigation standards and residential equipment efficiency



Irrigation Design



- Drip irrigation only in areas less than six feet wide

Healthy Trees



- Dedicated automatic irrigation to trees

Equipment Standards



- High-efficiency equipment and design required for all property types

No overhead watering between 10 a.m. and 6 p.m.



- A permit process for new sod and seed would be developed to allow for temporary daytime watering



4: Increase flexibility in soil amendment policy



In favor of healthy landscapes, this proposal supports:

- Additional Exceptions
 - Location (i.e. waterways)
 - Project size
 - Plant type
- More Flexibility
 - Expand eligibility for temporary waivers
 - Alternatives to tilling
- Best Practices
 - Photos as proof of amending
 - Soil tests





Wrap-up

Xeriscape & Soil Amendment

Ongoing

- Continue to develop opportunities
- Analyze cost and water savings
- Align with City efforts
 - Land Use Code update
 - Water Efficiency Plan update
 - Urban Forest Strategic Plan

Before first reading

- Complete public engagement round two
- Identify and develop resources for success
 - **Education**
 - Incentives
 - Cross-departmental training/collaboration
 - Staffing needs
 - Funding sources

Future

- Plan for first reading (Q3 2023)





Discussion

A. What feedback does Council have regarding the four proposed opportunities?

1. Less turf in new development and redevelopment (three options)
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B. What additional information is needed?

THANK YOU!

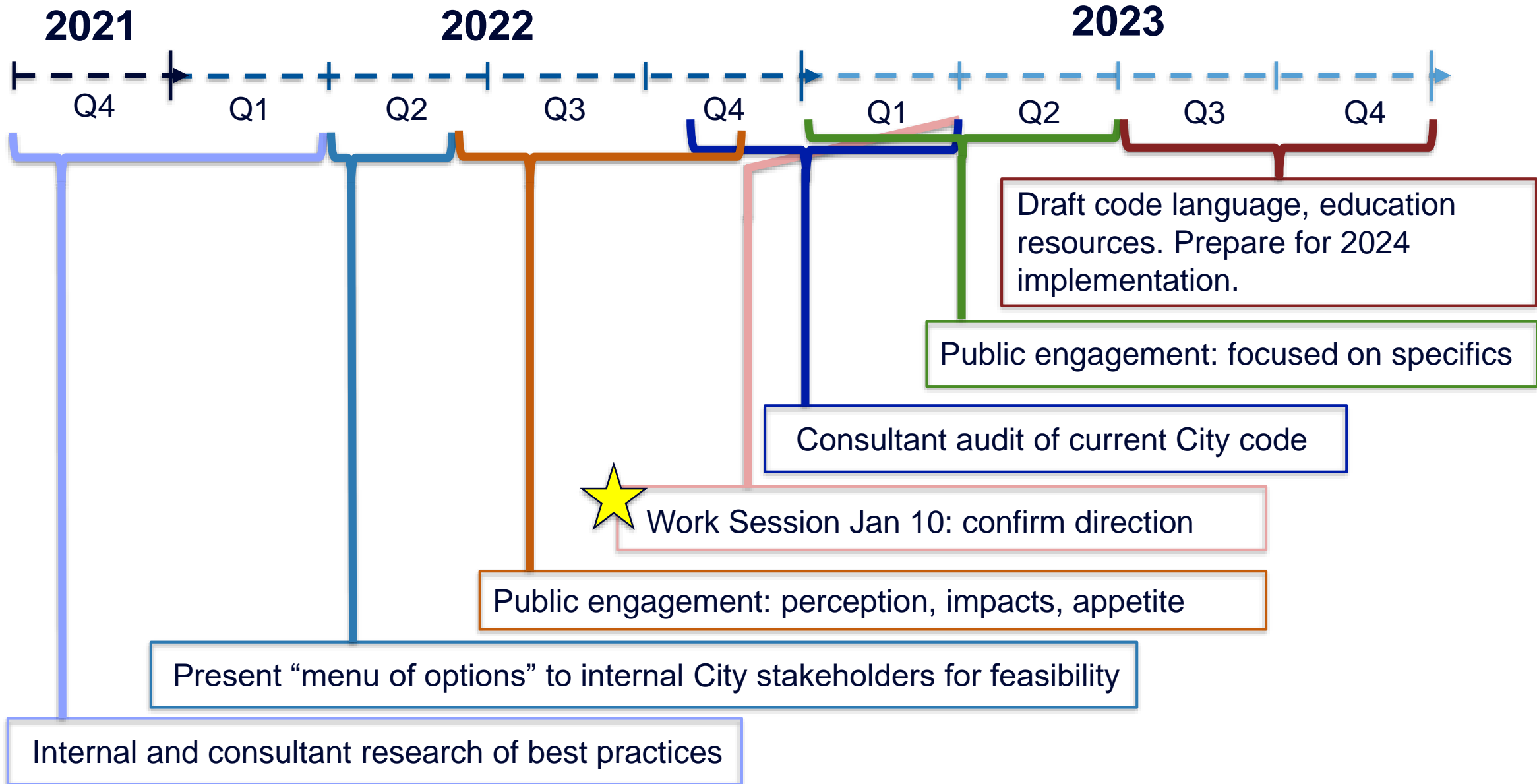
For Questions or Comments, Please Contact:

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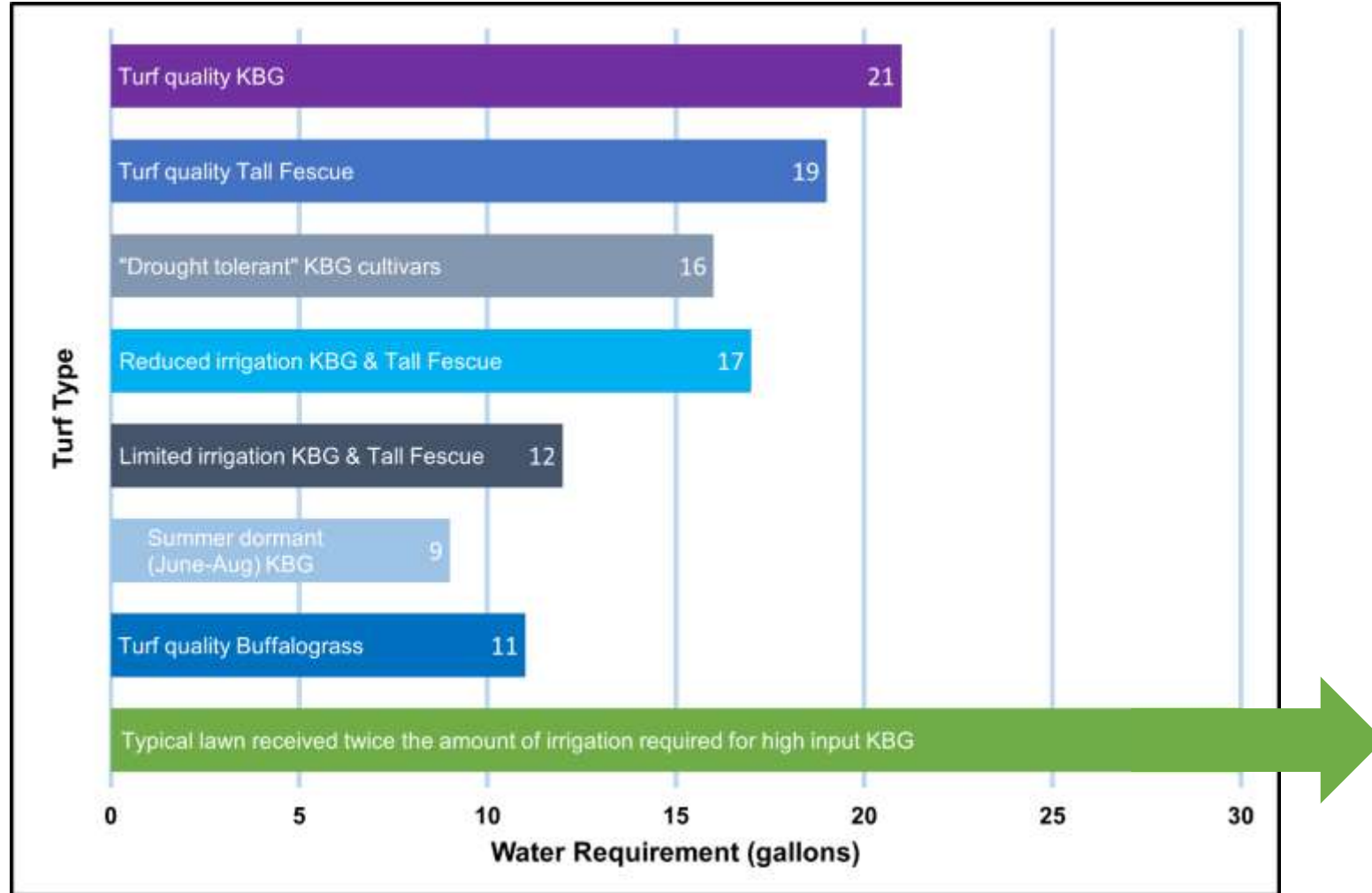






Project	Expenses	\$/sf	Estimated Savings (gal)	Area of conversion (sf)	Savings (gal/sf)	ROI without incentives
1	\$20,000	\$7	152,050	2,850	53	31
2	\$14,000	\$3	182,800	4,600	40	23
3	\$24,650	\$1.1	1,114,400	22,423	50	2
4	\$201,000	\$14	1,818,330	14,841	123	5
5	\$90,000	\$21	85,146	4,382	19	10
6	\$12,092	\$0.12	989,472	98,396	10	1
7	\$20,000	\$0.26	182,148	78,190	2.3	5
Average	\$54,535	\$7	646,335	32,240	42	11

	Average Pervious Area (sf)	Total Pervious Area (sf)	Total Units (#)	Pervious Area per Unit (#/sf)	Estimated Pervious Area at Build-Out (sf)
Small	1,407	116,092	1,271	137	173,568
Medium	4,542	363,087	2,431	223	542,847
Large	64,026	5,462,722	17,298	472	8,167,248



How are we enforcing and how do we ensure small rebuilds are complying?:

Enforcement options:



- Self-certification by owner or applicant
- Fines/escrows/abatement
- Random inspections
- Full verification

Considerations:



- Currently at resource capacity
- Increased FTE's
- Increased resources (i.e., vehicles, tools)



Commercial



Commercial (Multifamily)



Residential



Existing

Option C



	Option A	Option B	Option C
Annual Estimated Residential Savings	49 MG	67 MG	92 MG
Annual Estimated Multi-Family Savings	29 MG	53 MG	55 MG
TOTAL	78 MG	120 MG	147 MG
Equivalent to the water use of about ___ homes for one year²	940	1,450	1,770

¹It is difficult to estimate development scenarios for commercial business at GMA build-out. Commercial businesses were intentionally left out of these slides.

²The average annual residential water use for Fort Collins Utilities water service customers in 2018-2020 was 83,000 gallons.