

GOLDWATER PROJECT



Water Conservation Advisory Council *Review of Region H Report – 2015*

GOLDWATER PROJECT OBJECTIVES

- **Engage cities, MUDs and other utilities to collect their data**
- **Interview to determine current, previous and planned conservation strategies**
- **Use water tracking tool and other methods to quantify and project savings**
- **Provide individual reports that detail utility's share of county goal and how to remain on pace with tailored, cost effective measures**
- **Provide county reports that track progress and make recommendations to meet goals**

QUANTIFIABLE SAVINGS

- **Not all measures can be properly measured but are still important!**
- **Project still notes these efforts**
- **Focus is on measures derived from evidence-based studies, field results, manufacturer guarantees and software to put a number to each strategy**
- **Current list totals 38 strategies**

REGION H CONSERVATION GOALS

2060 Goals by County in Million Gallons:

Brazoria County	1,277 MG
Fort Bend County	5,704 MG
Galveston County	298 MG
Harris County	21,815 MG
Montgomery County	4,265 MG
Remaining 10 Counties	1,020 MG
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TOTAL	34,475 MG

Note: Top 5 counties account for 97% of Region H's total goal for 2060.

Vital Stats for Region H Progress

- Region H is currently saving **2,162 MG** of water per year with its existing, installed water conservation strategies.
- This represents **10.5 percent** of the region's target, adjusted for population during the planning period.
- Region H has until 2060—45 years—to install sufficient strategies to meet **the remaining 89.5 percent** of the goal.

County-by-County Progress

Brazoria County:	0%
Fort Bend County:	11.5%
Galveston County:	32.8%
Harris County:	9.5%
Montgomery County:	28%
Remaining 10 Counties:	0%
<u>Region H as a whole:</u>	10.5%

SAVINGS PROFILE FOR REGION H

- 1. 2x Outdoor Watering Restrictions**
- 2. W.I.S.E. Guys Audits**
- 3. Rain Barrels — Residential Customers**
- 4. Commercial Kitchen Pre-rinse Spray Valve Replacements**
- 5. AMI/AMR Smart Metering**
- 6. WaterWise Take-home Kits**
- 7. Water Loss Reduction**

Actual Savings of All Participating Utilities in Region H (MG)

Year #	Year	Brazoria County	Fort Bend County	Galveston County	Harris County	Montgomery County	WaterWise Kit Savings in Region H	Rest of Region Actual Savings	Total Actual Savings (MG)	Region H Goal (MG)	Over (Short)
1	2016	0	202	9	791	465	696	0	2,162	766	1,396
2	2017	0	202	9	1,192	472	760	0	2,634	1,532	1,102
3	2018	0	202	9	1,597	474	828	0	3,110	2,298	812
4	2019	0	202	9	2,007	477	884	0	3,580	3,064	515
5	2020	0	202	9	2,422	481	931	0	4,045	3,831	215
6	2021	0	0	9	2,841	486	931	0	4,268	4,597	(329)
7	2022	0	0	10	3,264	491	931	0	4,696	5,363	(667)
8	2023	0	0	10	3,692	495	931	0	5,129	6,129	(1,000)
9	2024	0	0	10	4,125	501	931	0	5,567	6,895	(1,328)
10	2025	0	0	10	4,562	506	931	0	6,009	7,661	(1,652)
11	2026	0	0	10	5,001	511	890	0	6,413	8,427	(2,014)
12	2027	0	0	10	5,447	516	704	0	6,678	9,193	(2,516)
13	2028	0	0	10	5,897	521	518	0	6,947	9,959	(3,012)
14	2029	0	0	11	6,352	527	332	0	7,221	10,726	(3,504)
15	2030	0	0	11	6,812	532	146	0	7,499	11,492	(3,992)
16	2031	0	0	11	7,276	537	0	0	7,823	12,258	(4,435)
17	2032	0	0	11	7,744	542	0	0	8,296	13,024	(4,727)
18	2033	0	0	11	8,217	546	0	0	8,774	13,790	(5,016)
19	2034	0	0	11	8,694	551	0	0	9,257	14,556	(5,299)
20	2035	0	0	11	9,176	556	0	0	9,744	15,322	(5,578)
21	2036	0	0	11	9,663	561	0	0	10,235	16,088	(5,853)
22	2037	0	0	12	10,154	566	0	0	10,732	16,854	(6,123)
23	2038	0	0	12	10,649	571	0	0	11,232	17,621	(6,389)
24	2039	0	0	12	11,149	576	0	0	11,737	18,387	(6,650)
25	2040	0	0	12	11,653	582	0	0	12,247	19,153	(6,906)
26	2041	0	0	12	12,162	587	0	0	12,761	19,919	(7,158)
27	2042	0	0	12	12,675	595	0	0	13,283	20,685	(7,402)
28	2043	0	0	12	12,675	601	0	0	13,289	21,451	(8,162)
29	2044	0	0	12	12,675	607	0	0	13,295	22,217	(8,923)
30	2045	0	0	13	12,675	612	0	0	13,300	22,983	(9,684)
31	2046	0	0	13	12,675	617	0	0	13,305	23,749	(10,444)
32	2047	0	0	13	12,675	622	0	0	13,310	24,516	(11,205)
33	2048	0	0	13	12,675	628	0	0	13,316	25,282	(11,965)
34	2049	0	0	13	12,675	633	0	0	13,321	26,048	(12,727)
35	2050	0	0	13	12,675	639	0	0	13,327	26,814	(13,487)
36	2051	0	0	13	12,675	643	0	0	13,332	27,580	(14,248)
37	2052	0	0	13	12,675	649	0	0	13,338	28,346	(15,008)
38	2053	0	0	14	12,675	654	0	0	13,343	29,112	(15,769)
39	2054	0	0	14	12,675	660	0	0	13,349	29,878	(16,529)
40	2055	0	0	14	12,675	665	0	0	13,354	30,644	(17,291)
41	2056	0	0	14	12,675	671	0	0	13,360	31,411	(18,051)
42	2057	0	0	14	12,675	675	0	0	13,365	32,177	(18,812)
43	2058	0	0	14	12,675	681	0	0	13,371	32,943	(19,572)
44	2059	0	0	14	12,675	686	0	0	13,376	33,709	(20,333)
45	2060	0	0	14	12,675	692	0	0	13,382	34,475	(21,093)

Savings if Participating Utilities (including current savings) Adopt 2x Watering (MG)

Year #	Year	Brazoria County	Fort Bend County	Galveston County	Harris County	Montgomery County	Rest of Region Actual Savings	WaterWise Kit Savings in Region H	Total Potential Savings (MG)	Region H Goal (MG)	Over (Short)
1	2016	232	971	540	6,417	465	0	696	9,320	766	8,554
2	2017	236	984	543	6,870	472	0	760	9,864	1,532	8,332
3	2018	240	996	547	7,327	474	0	828	10,411	2,298	8,113
4	2019	244	1,008	550	7,789	477	0	884	10,953	3,064	7,888
5	2020	248	1,020	554	8,256	481	0	931	11,489	3,831	7,659
6	2021	252	831	558	8,727	486	0	931	11,784	4,597	7,188
7	2022	256	843	561	9,202	491	0	931	12,284	5,363	6,921
8	2023	260	855	565	9,682	495	0	931	12,788	6,129	6,659
9	2024	264	868	568	10,166	501	0	931	13,298	6,895	6,403
10	2025	267	880	572	10,655	506	0	931	13,812	7,661	6,151
11	2026	271	892	576	11,146	511	0	890	14,287	8,427	5,860
12	2027	275	905	579	11,644	516	0	704	14,625	9,193	5,431
13	2028	279	917	583	12,147	521	0	518	14,965	9,959	5,006
14	2029	283	929	587	12,654	527	0	332	15,311	10,726	4,585
15	2030	287	942	590	13,165	532	0	146	15,661	11,492	4,170
16	2031	291	954	594	13,681	537	0	0	16,056	12,258	3,799
17	2032	295	966	597	14,201	542	0	0	16,601	13,024	3,577
18	2033	299	979	601	14,726	546	0	0	17,152	13,790	3,362
19	2034	303	991	605	15,255	551	0	0	17,706	14,556	3,149
20	2035	307	1,003	608	15,789	556	0	0	18,264	15,322	2,942
21	2036	311	1,016	612	16,328	561	0	0	18,828	16,088	2,740
22	2037	315	1,028	615	16,871	566	0	0	19,395	16,854	2,541
23	2038	319	1,040	619	17,418	571	0	0	19,967	17,621	2,347
24	2039	323	1,053	623	17,970	576	0	0	20,545	18,387	2,158
25	2040	327	1,065	626	18,526	582	0	0	21,126	19,153	1,973
26	2041	331	1,077	630	19,087	587	0	0	21,711	19,919	1,792
27	2042	335	1,090	634	19,652	595	0	0	22,306	20,685	1,621
28	2043	339	1,102	637	19,704	601	0	0	22,383	21,451	932
29	2044	342	1,114	641	19,756	607	0	0	22,460	22,217	243
30	2045	346	1,127	644	19,808	612	0	0	22,537	22,983	(446)
31	2046	350	1,139	648	19,860	617	0	0	22,615	23,749	(1,135)
32	2047	354	1,151	652	19,912	622	0	0	22,691	24,516	(1,825)
33	2048	358	1,164	655	19,964	628	0	0	22,769	25,282	(2,512)
34	2049	362	1,176	659	20,016	633	0	0	22,846	26,048	(3,202)
35	2050	366	1,188	663	20,068	639	0	0	22,923	26,814	(3,891)
36	2051	370	1,201	666	20,120	643	0	0	23,000	27,580	(4,580)
37	2052	374	1,213	670	20,172	649	0	0	23,078	28,346	(5,268)
38	2053	378	1,225	673	20,224	654	0	0	23,154	29,112	(5,958)
39	2054	382	1,238	677	20,276	660	0	0	23,232	29,878	(6,646)
40	2055	386	1,250	681	20,328	665	0	0	23,309	30,644	(7,336)
41	2056	390	1,262	684	20,379	671	0	0	23,386	31,411	(8,024)
42	2057	394	1,275	688	20,431	675	0	0	23,464	32,177	(8,713)
43	2058	398	1,287	691	20,483	681	0	0	23,541	32,943	(9,402)
44	2059	402	1,299	695	20,535	686	0	0	23,617	33,709	(10,092)
45	2060	406	1,312	698	20,587	692	0	0	23,695	34,475	(10,780)

Savings if Participating Utilities and All New Regional Growth in Top 5 Counties Adopt 2x Watering (MG)

Year #	Year	Brazoria County	Fort Bend County	Galveston County	Harris County	Montgomery County	County-Other (Top 5 Counties) Potential 2x Watering Savings (MG)	WaterWise Kit Savings in Region H	Total Potential Savings (MG)	Region H Goal (MG)	Over (Short)
1	2016	232	971	540	6,417	465	1,059	696	10,379	766	9,613
2	2017	236	984	543	6,870	472	1,120	760	10,985	1,532	9,452
3	2018	240	996	547	7,327	474	1,182	828	11,593	2,298	9,295
4	2019	244	1,008	550	7,789	477	1,243	884	12,195	3,064	9,131
5	2020	248	1,020	554	8,256	481	1,304	931	12,793	3,831	8,963
6	2021	252	831	558	8,727	486	1,365	931	13,150	4,597	8,553
7	2022	256	843	561	9,202	491	1,427	931	13,710	5,363	8,348
8	2023	260	855	565	9,682	495	1,488	931	14,276	6,129	8,147
9	2024	264	868	568	10,166	501	1,550	931	14,848	6,895	7,953
10	2025	267	880	572	10,655	506	1,611	931	15,423	7,661	7,762
11	2026	271	892	576	11,146	511	1,672	890	15,959	8,427	7,532
12	2027	275	905	579	11,644	516	1,733	704	16,358	9,193	7,165
13	2028	279	917	583	12,147	521	1,795	518	16,760	9,959	6,801
14	2029	283	929	587	12,654	527	1,856	332	17,167	10,726	6,441
15	2030	287	942	590	13,165	532	1,917	146	17,579	11,492	6,087
16	2031	291	954	594	13,681	537	1,978	0	18,035	12,258	5,777
17	2032	295	966	597	14,201	542	2,040	0	18,641	13,024	5,617
18	2033	299	979	601	14,726	546	2,101	0	19,253	13,790	5,463
19	2034	303	991	605	15,255	551	2,162	0	19,868	14,556	5,312
20	2035	307	1,003	608	15,789	556	2,224	0	20,488	15,322	5,165
21	2036	311	1,016	612	16,328	561	2,285	0	21,113	16,088	5,025
22	2037	315	1,028	615	16,871	566	2,346	0	21,742	16,854	4,887
23	2038	319	1,040	619	17,418	571	2,408	0	22,375	17,621	4,754
24	2039	323	1,053	623	17,970	576	2,469	0	23,013	18,387	4,627
25	2040	327	1,065	626	18,526	582	2,530	0	23,656	19,153	4,503
26	2041	331	1,077	630	19,087	587	2,591	0	24,302	19,919	4,384
27	2042	335	1,090	634	19,652	595	2,653	0	24,958	20,685	4,273
28	2043	339	1,102	637	19,704	601	2,714	0	25,097	21,451	3,646
29	2044	342	1,114	641	19,756	607	2,775	0	25,235	22,217	3,018
30	2045	346	1,127	644	19,808	612	2,836	0	25,374	22,983	2,391
31	2046	350	1,139	648	19,860	617	2,898	0	25,512	23,749	1,763
32	2047	354	1,151	652	19,912	622	2,959	0	25,650	24,516	1,134
33	2048	358	1,164	655	19,964	628	3,021	0	25,790	25,282	508
34	2049	362	1,176	659	20,016	633	3,082	0	25,927	26,048	(120)
35	2050	366	1,188	663	20,068	639	3,143	0	26,066	26,814	(748)
36	2051	370	1,201	666	20,120	643	3,204	0	26,205	27,580	(1,375)
37	2052	374	1,213	670	20,172	649	3,266	0	26,343	28,346	(2,003)
38	2053	378	1,225	673	20,224	654	3,327	0	26,481	29,112	(2,631)
39	2054	382	1,238	677	20,276	660	3,388	0	26,621	29,878	(3,258)
40	2055	386	1,250	681	20,328	665	3,449	0	26,758	30,644	(3,886)
41	2056	390	1,262	684	20,379	671	3,511	0	26,897	31,411	(4,514)
42	2057	394	1,275	688	20,431	675	3,572	0	27,035	32,177	(5,141)
43	2058	398	1,287	691	20,483	681	3,633	0	27,174	32,943	(5,769)
44	2059	402	1,299	695	20,535	686	3,695	0	27,312	33,709	(6,397)
45	2060	406	1,312	698	20,587	692	3,755	0	27,450	34,475	(7,025)

Savings if All Utilities in the Region (Top 5 Counties) Adopt 2x Watering (MG)

Year #	Year	Brazoria County	Fort Bend County	Galveston County	Harris County	Montgomery County	Rest of Region (Top 5 Counties) Potential 2x Watering Savings (MG)	WaterWise Kit Savings in Region H	Total Potential Savings (MG)	Region H Goal (MG)	Over (Short)
1	2016	232	971	540	6,417	465	6,678	696	15,998	766	15,232
2	2017	236	984	543	6,870	472	6,806	760	16,671	1,532	15,138
3	2018	240	996	547	7,327	474	6,935	828	17,346	2,298	15,048
4	2019	244	1,008	550	7,789	477	7,063	884	18,016	3,064	14,951
5	2020	248	1,020	554	8,256	481	7,192	931	18,681	3,831	14,850
6	2021	252	831	558	8,727	486	7,320	931	19,104	4,597	14,508
7	2022	256	843	561	9,202	491	7,448	931	19,732	5,363	14,369
8	2023	260	855	565	9,682	495	7,577	931	20,365	6,129	14,236
9	2024	264	868	568	10,166	501	7,705	931	21,004	6,895	14,109
10	2025	267	880	572	10,655	506	7,834	931	21,646	7,661	13,985
11	2026	271	892	576	11,146	511	7,962	890	22,250	8,427	13,822
12	2027	275	905	579	11,644	516	8,091	704	22,715	9,193	13,522
13	2028	279	917	583	12,147	521	8,219	518	23,184	9,959	13,225
14	2029	283	929	587	12,654	527	8,347	332	23,658	10,726	12,933
15	2030	287	942	590	13,165	532	8,476	146	24,137	11,492	12,646
16	2031	291	954	594	13,681	537	8,604	0	24,661	12,258	12,403
17	2032	295	966	597	14,201	542	8,733	0	25,334	13,024	12,310
18	2033	299	979	601	14,726	546	8,861	0	26,013	13,790	12,223
19	2034	303	991	605	15,255	551	8,990	0	26,695	14,556	12,139
20	2035	307	1,003	608	15,789	556	9,118	0	27,382	15,322	12,060
21	2036	311	1,016	612	16,328	561	9,247	0	28,074	16,088	11,986
22	2037	315	1,028	615	16,871	566	9,375	0	28,770	16,854	11,916
23	2038	319	1,040	619	17,418	571	9,503	0	29,471	17,621	11,850
24	2039	323	1,053	623	17,970	576	9,632	0	30,176	18,387	11,790
25	2040	327	1,065	626	18,526	582	9,760	0	30,886	19,153	11,733
26	2041	331	1,077	630	19,087	587	9,889	0	31,600	19,919	11,681
27	2042	335	1,090	634	19,652	595	10,017	0	32,323	20,685	11,638
28	2043	339	1,102	637	19,704	601	10,146	0	32,528	21,451	11,077
29	2044	342	1,114	641	19,756	607	10,274	0	32,734	22,217	10,517
30	2045	346	1,127	644	19,808	612	10,402	0	32,940	22,983	9,957
31	2046	350	1,139	648	19,860	617	10,531	0	33,146	23,749	9,396
32	2047	354	1,151	652	19,912	622	10,659	0	33,350	24,516	8,835
33	2048	358	1,164	655	19,964	628	10,788	0	33,557	25,282	8,275
34	2049	362	1,176	659	20,016	633	10,916	0	33,762	26,048	7,714
35	2050	366	1,188	663	20,068	639	11,045	0	33,968	26,814	7,154
36	2051	370	1,201	666	20,120	643	11,173	0	34,173	27,580	6,593
37	2052	374	1,213	670	20,172	649	11,301	0	34,379	28,346	6,033
38	2053	378	1,225	673	20,224	654	11,430	0	34,584	29,112	5,472
39	2054	382	1,238	677	20,276	660	11,558	0	34,791	29,878	4,912
40	2055	386	1,250	681	20,328	665	11,687	0	34,995	30,644	4,351
41	2056	390	1,262	684	20,379	671	11,815	0	35,201	31,411	3,791
42	2057	394	1,275	688	20,431	675	11,944	0	35,407	32,177	3,230
43	2058	398	1,287	691	20,483	681	12,072	0	35,613	32,943	2,670
44	2059	402	1,299	695	20,535	686	12,200	0	35,818	33,709	2,109
45	2060	406	1,312	698	20,587	692	12,329	0	36,025	34,475	1,550

CHALLENGES FOR REGION H

1. Regional Communication

2. No Mandatory Measures Can Be Implemented

1. Top-down Repair Initiatives

- Region H can save 4,323 MG per year from just a one percent water loss repair savings rate across the major water user groups identified by the RHPG.
- This one percent water loss repair effort would save about 13 percent of Region H's 45-year conservation goal

4. Take-or-Pay Contracts Do Not Incentivize Conservation

RECOMMENDATIONS FOR REGION H PLANNERS

- 1. Use the report's Appendix to identify where each of the region's major counties stands in meeting its goals.**
 - Each county section in the **Appendix** contains tables similar to the regional tables presented here.
- 2. Encourage broader participation in the Goldwater Project.**
 - Increased participation will be imperative in future years to ensure accuracy, foster a more complete understanding of regional conservation and achieve county goals.
- 3. Cities, water districts and private companies should limit lawn watering to two days a week if they have not already.**
 - Our projections show that this is the single most important measure that can be adopted throughout the region
 - Conroe and WJPA have successfully implemented this policy and have achieved significant and lasting savings.
- 4. Communication from the RHPG emphasizing just how much water is saved through this measure could be key to adoption.**

RECOMMENDATIONS FOR REGION H PLANNERS

- 5. Utilities should consider adopting the advanced conservation strategies detailed in their individual reports.**
 - These strategies are all projected to be highly cost effective.
 - We are working with utilities to help analyze and adopt appropriate measures within these lists.
- 6. Older MUDs and cities should consider applying for SWIFT funds to address water loss due to aging infrastructure.**
 - Developments with newer water systems may find that there are more cost efficient options than addressing water loss.
- 7. Cities should consider requiring all restaurants, bars and hotels to only serve water unless customers ask for it.**
- 8. Allow the Goldwater Project team to help coordinate with the Texas Water Development Board.**
 - Ensures uniform data collection and eliminates errors in reporting

RECOMMENDATIONS FOR STATE WATER PLANNERS

1. Cities, water districts and private companies statewide should limit lawn watering to no more than two days a week.

- A statewide communication campaign could illustrate the immense savings that would result.
- The state would be on pace with conservation goals for many years into the future.

2. Influence MUD standards at the Texas Legislature.

- At the time MUDs are enabled by legislation, require these newly regulated utilities to adhere to a restriction permanently limiting outdoor lawn watering to no more than two times per week.
- By requiring this at the state level, tensions between customers and local elected officials are relieved and direly needed water savings are still achieved.

RECOMMENDATIONS FOR STATE WATER PLANNERS

- 3. Make system flushing “as needed” rather than mandated monthly.**
 - Three solutions:
 - TCEQ could change the rule internally.
 - Advocate for state legislation to change the TCEQ rule.
 - A more local solution is to promote NO-DES (Neutral Output Discharge Elimination System) water main flushing for utilities within the county.
- 4. Utilities should be required to implement their conservation plans. Implementation should include a uniform measuring and reporting system approved by TWDB.**
- 5. All utilities should be made aware of or assigned a water conservation goal in each regional water plan.**

Participating Utilities

Brazoria County

City of Lake Jackson
City of Pearland*

Fort Bend County

Cinco MUD #1
Cinco MUD #2
Cinco MUD #3*
Cinco MUD #4
Cinco MUD #5
Cinco MUD #6*
Cinco MUD #7
Cinco MUD #8
Cinco MUD #9*
Cinco MUD #10
Cinco MUD #12
Cinco MUD #14
Fort Bend County MUD #23
Fort Bend County MUD #25
Fort Bend County MUD #57
Fort Bend County MUD #58
Fort Bend County MUD #69
Fort Bend County MUD #115
Fort Bend County MUD #116
City of Stafford (FB WCID #2)*
City of Sugar Land

Galveston County

City of Friendswood*
City of Galveston
City of Dickinson (GC WCID #1)
City of League City*
City of Sante Fe (GC WCID #8)

Harris County

City of Baytown*
City of Deer Park
Emerald Forest MUD
Fountainhead MUD
Harris County MUD #18
Harris County MUD #50
Harris County MUD #118
Harris County MUD #167
Harris County MUD #188
Harris County MUD #230
Harris County MUD #365
City of Houston*
City of Humble
Interstate MUD
City of Pasadena
Renn Road MUD
West Memorial MUD

Montgomery County

City of Conroe
The Woodlands MUD #2
Montgomery County MUD #6
Montgomery County MUD #7
Montgomery County MUD #36
Montgomery County MUD #39
Montgomery County MUD #40
Montgomery County MUD #46
Montgomery County MUD #47
Montgomery County MUD #60
Montgomery County MUD #67
The Woodlands Metro Center MUD

*County split

NEXT STEPS

- **Continue to track and quantify**
- **Assist participating utilities in developing their conservation plans, utility profiles and uniform projected results that meet all the requirements of the TWDB**
- **Work with utilities and stakeholders to remain on pace with goals**
- **Statewide application of the Project**

SPECIAL THANKS:



**The Meadows
Foundation**

HOUSTON ENDOWMENT

A PHILANTHROPY ENDOWED BY JESSE H. AND MARY GIBBS JONES



GOLDWATER PROJECT



Water Conservation Advisory Council *Review of Region H Report – 2015*