

Region K Cutoff Model Surface Water Availability Modeling Discussion

Lower Colorado Regional Water Planning Group

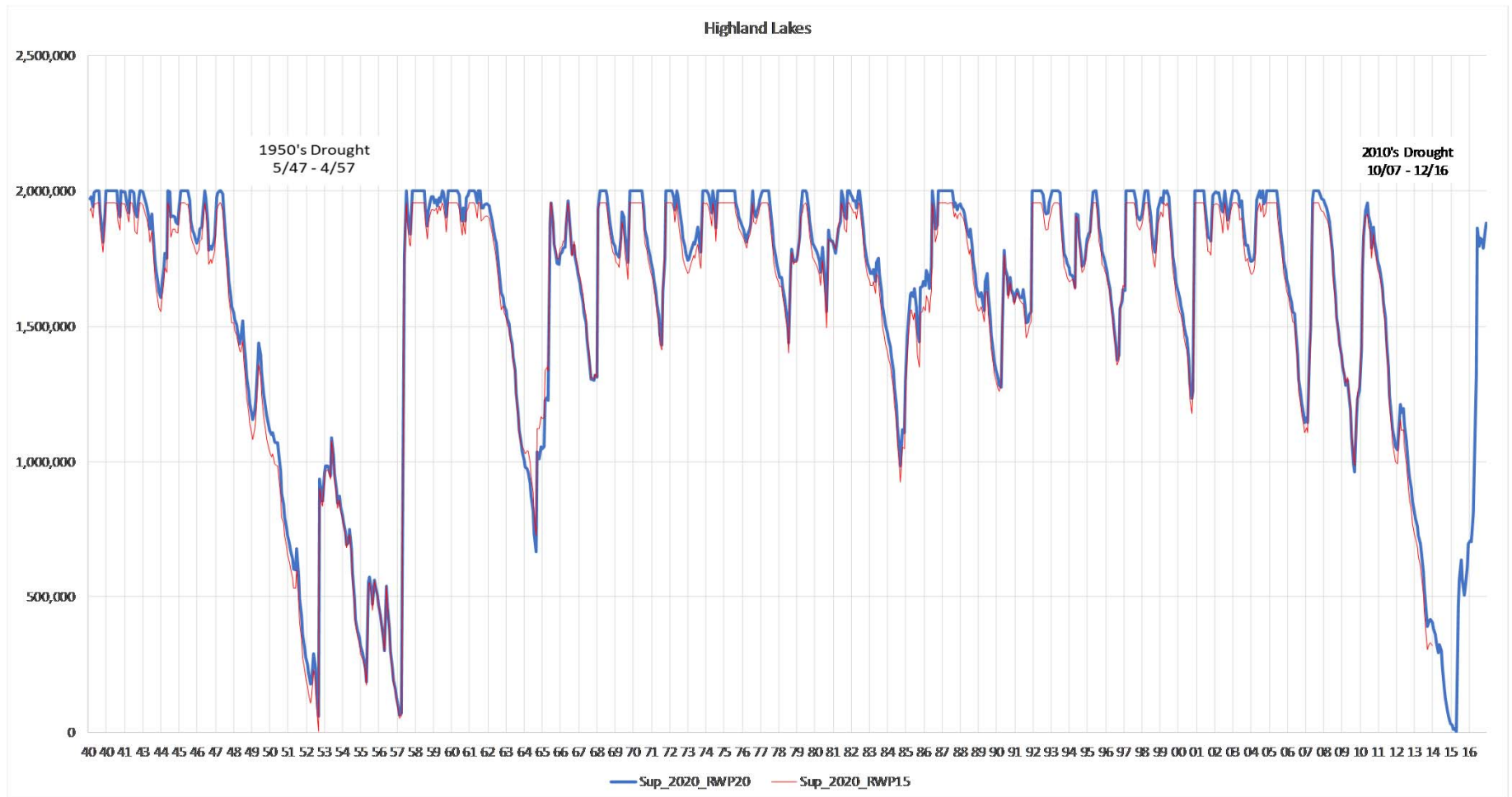
Water Modeling Committee Meeting

June 27, 2018

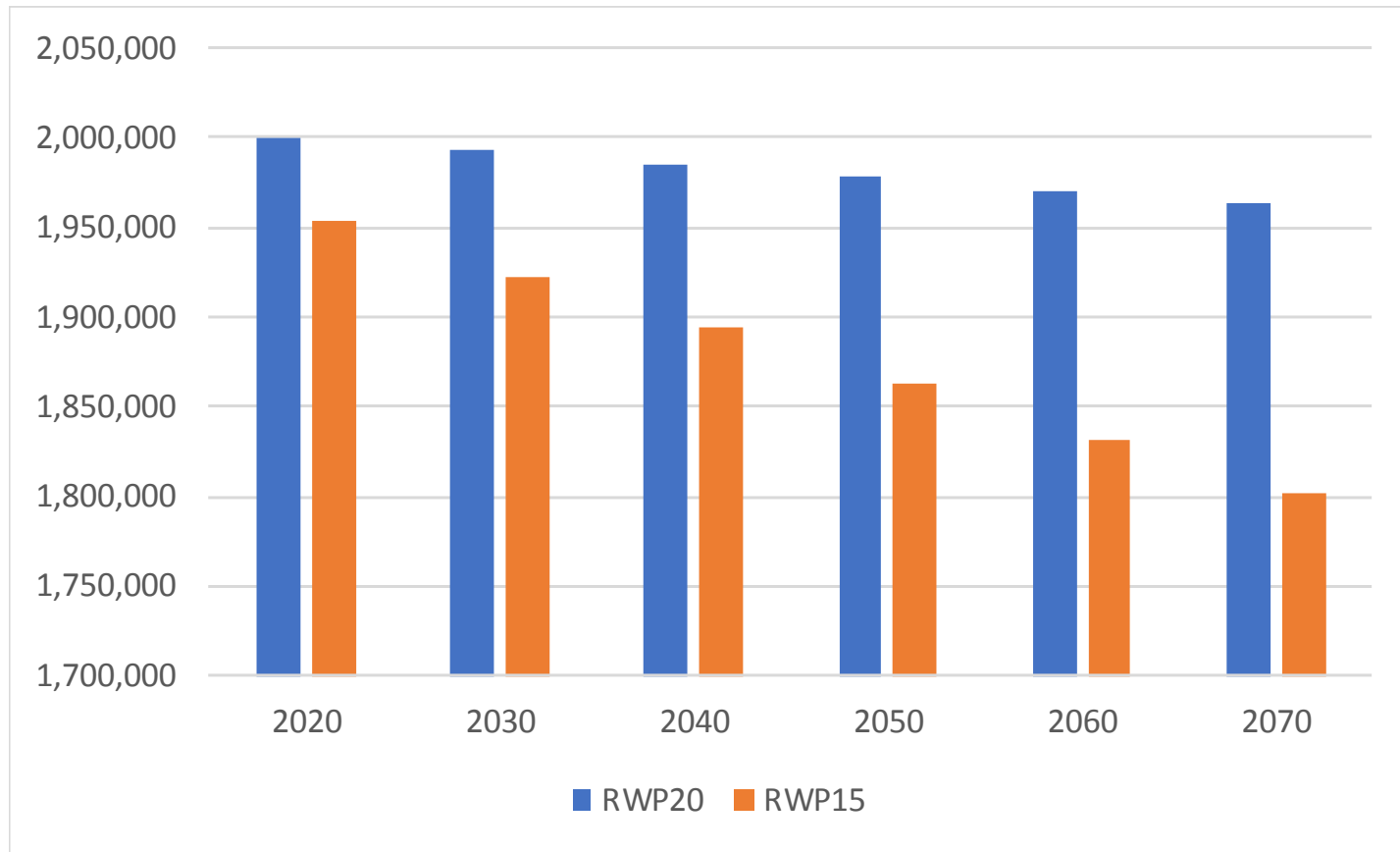
Background and effort-to-date

- WAM Hydrology (2013->2016)
- LCRA's lower basin water rights
 - Off-Channel Reservoir (Arbuckle)
 - Monthly Demand Pattern (irr -> ind, except 100k of Garwood)
 - Gulf Coast Water Right split into 2 parts
- Reservoir Sedimentation by Decade
- Water Rights Updates
- New City of Austin's municipal water right monthly demand pattern
- Update to Travis/Buchanan Storage balancing (OR record)

WAM Hydrology



Highland Lakes Combined Storage



Components of the Highland Lakes Firm Yield Full to Full

Entity or Use	RWP 2015					
	Region K Cutoff Model Results (Ac-Ft/Yr)					
	2020	2030	2040	2050	2060	2070
Water Available for LCRA Firm Contracts and Env Commitments	296,243	290,742	285,242	279,242	272,742	266,742
LCRA Backup of STPNOC Run-of-River Water Right	32,240	32,226	32,202	32,172	32,142	32,120
LCRA Backup of City of Austin Municipal Run-of-River Water Rights	90,327	90,327	90,327	90,327	90,315	90,261
LCRA Backup to Interruptible Run-of-River Water Rights	0	0	0	0	0	0
Total Highland Lakes Firm Yield	418,810	413,295	407,772	401,742	395,198	389,124

Entity or Use	RWP 2020					
	Region K Cutoff Model Results (Ac-Ft/Yr)					
	2020	2030	2040	2050	2060	2070
Water Available for LCRA Firm Contracts and Env Commitments	283,978	283,320	282,692	281,814	281,206	280,497
LCRA Backup of STPNOC Run-of-River Water Right	20,124	20,124	20,124	20,124	20,124	20,124
LCRA Backup of City of Austin Municipal Run-of-River Water Rights	88,159	88,159	88,159	88,159	88,159	88,159
LCRA Backup to Interruptible Run-of-River Water Rights	0	0	0	0	0	0
Total Highland Lakes Firm Yield	392,262	391,603	390,976	390,098	389,490	388,781

Entity or Use	RWP 2020 -2015					
	Region K Cutoff Model Results (Ac-Ft/Yr)					
	2020	2030	2040	2050	2060	2070
Water Available for LCRA Firm Contracts and Env Commitments	-12,264	-7,422	-2,550	2,572	8,464	13,755
LCRA Backup of STPNOC Run-of-River Water Right	-12,116	-12,101	-12,078	-12,048	-12,017	-11,996
LCRA Backup of City of Austin Municipal Run-of-River Water Rights	-2,168	-2,168	-2,168	-2,168	-2,155	-2,102
LCRA Backup to Interruptible Run-of-River Water Rights	0	0	0	0	0	0
Total Highland Lakes Firm Yield	-26,548	-21,692	-16,796	-11,644	-5,708	-343

Components of the Highland Lakes Firm Yield Full to Empty

Entity or Use	RWP 2015					
	Region K Cutoff Model Results (Ac-Ft/Yr)					
	2020	2030	2040	2050	2060	2070
Water Available for LCRA Firm Contracts and Env Commitments	301,178	295,596	290,016	283,927	277,331	271,244
LCRA Backup of STPNOC Run-of-River Water Right	29,025	28,998	28,954	28,898	28,841	28,800
LCRA Backup of City of Austin Municipal Run-of-River Water Rights	77,340	77,340	77,340	77,340	77,340	77,340
LCRA Backup to Interruptible Run-of-River Water Rights	0	0	0	0	0	0
Total Highland Lakes Firm Yield	407,543	401,935	396,310	390,165	383,512	377,384

Entity or Use	RWP 2020					
	Region K Cutoff Model Results (Ac-Ft/Yr)					
	2020	2030	2040	2050	2060	2070
Water Available for LCRA Firm Contracts and Env Commitments	281,283	280,630	280,007	279,137	278,534	277,831
LCRA Backup of STPNOC Run-of-River Water Right	24,547	24,547	24,547	24,547	24,547	24,547
LCRA Backup of City of Austin Municipal Run-of-River Water Rights	101,775	101,775	101,775	101,775	101,775	101,775
LCRA Backup to Interruptible Run-of-River Water Rights	0	0	0	0	0	0
Total Highland Lakes Firm Yield	407,605	406,952	406,329	405,458	404,855	404,153

Entity or Use	RWP 2020 -2015					
	Region K Cutoff Model Results (Ac-Ft/Yr)					
	2020	2030	2040	2050	2060	2070
Water Available for LCRA Firm Contracts and Env Commitments	-19,895	-14,967	-10,008	-4,791	1,203	6,587
LCRA Backup of STPNOC Run-of-River Water Right	-4,478	-4,451	-4,407	-4,351	-4,293	-4,253
LCRA Backup of City of Austin Municipal Run-of-River Water Rights	24,434	24,434	24,434	24,434	24,434	24,434
LCRA Backup to Interruptible Run-of-River Water Rights	0	0	0	0	0	0
Total Highland Lakes Firm Yield	62	5,017	10,019	15,293	21,344	26,769

Major Run-of-River Rights

Water Right	Water Rights Holder	Maximum Permitted Diversion (ac-ft/yr)	Priority Date	RWP 2015		RWP 2020		RWP 2020 - 2015	
				Region K Cutoff Model 2020	Region K Cutoff Model 2070	Region K Cutoff Model 2020	Region K Cutoff Model 2070	Region K Cutoff Model 2020	Region K Cutoff Model 2070
5434	LCRA - Garwood	133,000	Nov 1, 1900	120,762	120,762	121,615	121,615	853	853
	Garwood	Sub-Total		120,762	120,762	121,615	121,615	853	853
5475	LCRA - Lakeside #1 Sr	52,500	Jan 4, 1901	2,780	2,780	3,212	3,212	432	432
5475	LCRA - Lakeside #1 Jr	78,750	Nov 1, 1987	0	0	0	0	0	0
5475	LCRA - Lakeside #2	55,000	Sep 2, 1907	2,912	2,912	4,748	4,748	1,836	1,836
	Lakeside #1 and #2	Sub-Total		5,692	5,692	7,960	7,960	2,268	2,268
5476	LCRA - Gulf Coast Sr	228,570	Dec 1, 1900	13,446	13,446	42,258	42,258	28,813	28,813
5476	LCRA - Gulf Coast Jr	33,930	Nov 1, 1987	78	78	0	0	-78	-78
	Gulf Coast	Sub-Total		13,524	13,524	42,258	42,258	28,734	28,734
5477	LCRA - Pierce Ranch	55,000	Sep 1, 1907	2,912	2,912	2,139	2,139	-773	-773
	Pierce Ranch	Sub-Total		2,912	2,912	2,139	2,139	-773	-773
5471	City of Austin - (mun.) ¹	250,000	Jun 30, 1913	158,781	158,848	185,377	185,377	26,596	26,530
5471	City of Austin - (mun.) ¹		Jun 30, 1913	29,201	29,201	1,197	1,197	-28,005	-28,005
5471	City of Austin - (mun.) ¹	21,403	Jun 27, 1914	8,284	8,284	9,079	9,079	795	795
5471	City of Austin - (stm.)	24,000	Jun 27, 1914	4,970	4,970	0	0	-4,970	-4,970
5471	City of Austin - (stm.)		Jun 27, 1914	871	871	0	0	-871	-871
5489	City of Austin - (mun.) ¹	20,300	Aug 20, 1945	5,108	5,108	7,301	7,301	2,193	2,193
5489	City of Austin - (stm.)	16,156	Aug 20, 1945	0	0	0	0	0	0
5489	City of Austin - (stm.) ¹		Aug 20, 1945	5,097	5,097	5,262	5,261	164	164
5437	STP Nuclear Operating Co. ¹	102,000	Jun 10, 1974	44,397	44,397	71,287	71,287	26,890	26,890
5434	City of Corpus Christi	35,000	Nov 2, 1900	22,105	22,105	21,901	21,901	-204	-204
	Totals	1,433,200		421,705	421,772	475,376	475,376	53,671	53,604

¹ The water availability was averaged over the drought-of-record period because of LCRA backup water.

Path Forward

- Pending update to evaporation file
- Incorporate necessary changes to TCEQ Run 3 (new water rights) strategy model