

# Kansas Department of Agriculture Simplifies Consumptive Use Rules for Water Right Conversion



For communities and rural water districts located in areas of Kansas that are fully appropriated or closed to new appropriation, one of the only options for obtaining additional water is to convert an existing irrigation water right to “municipal use” or public water supply. Doing so requires an application to be filed with the Kansas Department of Agriculture’s Division of Water Resources (DWR) to change the use made of water, the place of use and likely the point of diversion. One of the many criteria DWR evaluates, when considering such changes in use made of water is how the change might affect the consumptive use of the water right.

## What is “Consumptive Use”?

“Consumptive Use” refers to the amount of water lost to evaporation along with water drawn up into the plant through the roots and transpiring through the leaves during crop growth. Water not evaporated, transpired or consumed by the growing crop, seeps back into the ground and theoretically returns to the aquifer, in a process referred to as “return flow.” That portion of the water which is estimated to return to the original source on an annual basis, is not eligible to be converted when changing a water right from irrigation to any other use. Consumptive use adjustments when changing water rights have long been a maligned subject, particularly by those looking to acquire water rights for conversion, namely dairies, feedlots and industry. The state’s former regulations usually, but not always, result in a reduction to the amount of water that could be changed or converted.

Significant changes in consumptive use began attracting attention of state regulators during the early 1980s, when irrigators began proposing large place of use increases to irrigate larger numbers of acres, enabled by improvements in irrigation technology and efficiency. For example, instead of irrigating a single quarter-section with a flood irrigation system, an irrigator might be able to cover two or more center pivot irrigated quarter-sections with the same quantity of water. While the increase in efficiency was viewed as a positive development for crop production, there was a growing concern that as water rights established under older technologies were converted to more efficient systems and then used to irrigate more and more acres, less and less water was returning to the source as additional water was being used to sustain crop growth, lost to evaporation and plant transpiration. By that time, it was also becoming abundantly clear that portions of the Ogallala aquifer were already being pumped (or

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mined) faster than could be naturally recharged. Moreover, reducing the historical return flows would exacerbate aquifer and streamflow depletions in those areas and potentially lead to impairment of neighboring and downstream water rights. Allowing this practice to continue unabated was deemed to be detrimental to the public interest.

To protect streams and aquifers in Kansas, DWR promulgated a basic rule and regulation in 1983, which prohibited the approval of change applications that proposed a substantial increase in consumptive use after a vested right had been determined, or after the time allowed in which to perfect the water right had expired (K.A.R. 5-5-3). After many years of wrestling with how to carry out the intent of this regulation, DWR adopted a policy in the early 1990s, which limited irrigation change applications to no more than the lesser of ten acres or ten percent of the actual number of acres that were legally irrigated during any one year of the perfection period. Irrigation water rights are initially allowed five years to develop or perfect the water right, with opportunities for extensions. The consumptive use policy was quickly promulgated as a rule and regulation in 1994.

The 1994 rules and regulations also dealt with changes in use made of water from irrigation to any other use, such as industrial, stockwater or municipal uses, that could result in a more significant reduction in return flows. In those types of

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changes, virtually none of the pumped water returns to the aquifer. Water pumped ultimately ends up in a lagoon or is treated and released at a different location, typically downstream from the original source. The Hays R9 ranch proposal is an example of what might happen with such a change. None of the water pumped and piped nearly 35 miles to the city of Hays from Edwards County will return to the original source. Certainly, with the sandy soils in the vicinity of the R9 ranch, a

percentage of the water pumped had historically returned to the aquifer and the water rights will be adjusted based on the consumptive use regulations by DWR's Chief Engineer through the change application process.

To convert an irrigation water right to any other use, the rules required the Chief Engineer to evaluate each water right on a case by case basis to determine the maximum number of acres legally irrigated during any one calendar year of the perfection period and multiply that number by the net irrigation requirement (amount of irrigation water needed for successful crop growth) for corn for the county in which the water right was developed, along with an irrigation efficiency factor. As you can imagine, this process resulted in a great deal of ambiguity on the part of individuals or entities interested in purchasing or selling water rights, since the amount of water available for conversion was an unknown quantity. In some cases, it resulted in the staff of DWR researching the water use history of individual water rights to

**Consumptive Use Percentages in Kansas, by County**  
based on area-weighted average irrigation return flow

CN 87.6%	RA 87.3%	DC 86.3%	NT 84.1%	PL 85.9%	SM 83.3%	JW 83.0%	RP 83.2%	WS 84.9%	MS 86.4%	NM 87.9%	BR 84.8%	DP 87.5%		
SH 87.7%	TH 87.5%	SD 87.7%	GH 87.0%	RO 86.6%	OB 78.7%	MC 85.4%	CD 84.4%	CY 84.2%	RL 85.4%	PT 88.0%	JA 84.8%	AT 88.0%	LV 86.2%	WY 87.6%
WA 87.5%	LG 87.0%	GO 86.7%	TR 86.1%	EL 82.0%	RS 83.0%	LC 86.3%	OT 86.3%	DK 85.9%	GE 85.9%	WB 86.4%	SN 83.5%	DG 86.5%	JO 85.0%	
GL 87.0%	WH 82.8%	SC 81.8%	LE 81.1%	NS 81.1%	RH 93.7%	BT 85.6%	EW 86.2%	SA 86.2%	MR 83.0%	LY 83.0%	OS 83.0%	FR 83.0%	MI 86.7%	
HM 83.0%	KE 87.3%	FI 87.4%	HG 83.8%	PN 87.3%	SF 84.4%	RN 79.7%	RC 82.6%	MP 87.7%	MN 84.6%	CS 86.7%	88.0%	CF 83.0%	AN 86.7%	LN 86.7%
ST 86.6%	GT 86.9%	HS 84.9%	GY 89.3%	FO 89.4%	ED 83.4%	PR 81.5%	KM 72.7%	SG 85.0%	82.3%	86.7%	WO 86.7%	AL 86.7%	BB 86.7%	
MT 88.3%	SV 89.1%	SW 87.6%	ME 84.8%	CA 86.7%	CM 86.9%	BA 83.4%	HP 88.0%	SU 88.2%	CL 87.2%	EK 86.7%	86.7%	WV 86.7%	NO 86.7%	CR 83.0%
										CQ 86.7%	MG 86.7%	LB 86.7%	CK 87.5%	

Example: A 150 acre-foot irrigation water right is purchased in Gove (GO) County for use in a dairy operation. Applying the consumptive use factor from the map (86.7%), the amount of water that the dairy could convert to stockwater use with this water right is:  $150 \times 86.7\% = 150 \times 0.867 = 130$  acre-feet



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come up with an answer to that question, before the water right owner and a potential water right purchaser could negotiate a value for the water right and before the full details of a change proposal were in front of the DWR Chief Engineer in the form of a change application. DWR staff could then be placed in an awkward position of making an unfavorable administrative decision on an application for which they had already provided advice. In other cases, it might result in a change application being filed without adequate research or input from DWR and the applicant receiving an answer they didn't expect, with a greater water right reduction than they were expecting for a water right that had already been purchased.

In an attempt to avoid these types of situations, new rules were adopted by the Chief Engineer last fall, which will greatly simplify the conversion calculation. A conversion percentage factor has been estimated by a computer model for each county in the state (see map). The face value of a water right can simply be multiplied by the percentage, for the county in which the water right is located, to obtain the answer to how much water can be converted for a new use. The values range from a high of 93.7 percent in Rush County, to a low of 72.7 percent in Kingman County. A prospective water right purchaser merely needs to know the water right's current legally authorized quantity. While the new rules and regulations were primarily adopted to facilitate conversion of irrigation water rights for feedlots and dairies, they also benefit water rights being converted to public water supply. Although the concept of consumptive use is not being eliminated as some might have liked, very little research is needed to make a determination about how much

water can be converted, removing the confusion and ambiguity for potential water right purchasers and sellers.

The new rules do, however, present a double-edged sword. In some cases under the old rules an entire water right would be eligible for conversion. For example, Kensington which was evaluated based on the old rules and regulations, 89.3 percent quantity of water authorized by the water right was eligible for conversion from irrigation to public water supply, based on how the water right was originally developed during its perfection period. Had the new rule and regulation been used to evaluate that change application today, only 83.3 percent of the water right would have been allowed to be converted, a reduction of nearly two million gallons. That case study is covered in greater detail in Doug Helmke's article in this same issue of *The Kansas Lifeline* (See page 82).

The Division of Water Resources staff will be presenting this subject during a session at the KRWA conference in March and can discuss the consumptive use regulations with you in greater detail. Likewise, if you have questions about converting water rights from irrigation to public water supply you may contact either me or Doug Helmke to discuss your specific case.

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