

**CALCULATING AND APPLYING THE ANNUAL CONSUMPTIVE QUANTITY (ACQ)**

Contact: Program Development and Operations Support Section

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References: RCW 90.03.380; RCW 90.03.615; RCW 90.14.140; RCW 90.38; RCW 90.42; RCW 90.44.520; RCW 90.92; WAC 173-173; POL-1210; GUID-1210.

Purpose: In accordance with RCW 90.03.380(1), the Water Resources Program is required to determine that a proposed change to add acreage to an irrigation right or to add purposes of use to a right will not increase the Annual Consumptive Quantity (ACQ) under the original right. See POL-1210 for eligibility of rights.

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1. Definition: "Annual Consumptive Quantity" means the estimated or actual annual amount of water diverted pursuant to the water right, reduced by the estimated annual amount of return flows, averaged over the two years of greatest use within the most recent five-year period of continuous beneficial use of the water right.
2. Data Sources: Calculation of ACQ can be made through analysis of one or more of the following: (1) flow meter, (2) power meter, (3) crop production or sales, or (4) aerial photography or maps combined with Washington Irrigation Guide (WIG)/consumptive use estimates (i.e. Blannet-Criddle calculation, WSU AgWeatherNet, etc.). The most accurate data sources should be used based upon the best professional judgment of the permit writer. Accordingly, water use estimates should be compared across a variety of multiple data sources to obtain the most accurate assessment of water use. For example, the use of aerial photography and crop irrigation requirement data generally would be less preferable than flow meter or power meter data, unless the power or flow meter data were deemed to be flawed or unreliable. However, flow meter or power meter data could be corroborated by aerial photos or crop data.
3. "Continuous Beneficial Use": Five years of continuous beneficial use is required by RCW 90.03.380(1) for calculation of ACQ. Applications for change where there is no five-year period of continuous beneficial use cannot be processed.
  - a. A period containing complete nonuse of the water right in a year or season, regardless of whether the period qualifies for one or more of the statutory good causes or exceptions to relinquishment under RCW 90.14.140 and 90.44.520 or has been in the Trust Water Rights Program under RCW 90.38 or 90.42, does not constitute continuous use and is not eligible for calculation of ACQ.

- b. A period containing partial use of the water right that qualifies for one or more statutory good causes or exceptions to relinquishment under RCW 90.14.140 or 90.44.520 does not constitute continuous use and is not eligible for calculation of ACQ.
  - c. A period containing partial use of the water right that does not qualify for one or more of the statutory good causes or exceptions to relinquishment under RCW 90.14.140 or 90.44.520 may constitute continuous use and is eligible for calculation of ACQ.
4. Period of Evaluation: Evaluation of the “most recent five-year period of continuous beneficial use” is required by RCW 90.03.380(1). In addition, RCW 90.03.615 instructs that if the most recent five-year period does not qualify as “continuous beneficial use,” “the department shall look to the most recent five-year period of continuous beneficial use preceding the date where the excuse for nonuse under RCW 90.14.140 was established and remained in effect.”<sup>1</sup>
- a. *Where more than one five-year period of continuous beneficial use of the water right has historically occurred*, the most recent period shall be used in this calculation. The first period to consider is the five years immediately preceding the date of the Report of Examination issuance. The first year to be included in the period of evaluation will generally be the full season or year immediately preceding the decision date of the application for change. Depending on the method of calculation and the availability of metering or power consumption data, it may not be possible to use the most recent season or year because the data is not reasonably available. The permit writer may exercise judgment when determining the availability of data to support the ACQ calculation. However, the principle to be adhered to is, if the data are, or should be, reasonably available at the time the decision is made, the most recent years should be used.
  - b. *Where the most recent five-year period does not contain continuous beneficial use and is not eligible for ACQ per Section 3 above*, the permit writer shall investigate historic water use to find the next most recent five-year period of continuous beneficial use of the water right.
  - c. *Where the most recent five-year period includes a period in which the right was banked under RCW 90.92*, the permit writer may simply “skip over” the banked years to find a five-year period of beneficial use. Pursuant to RCW 90.92.070(5), the period does not have to be continuous and should not include times that the right was banked under RCW 90.92. Note that RCW 90.92 expires in 2019.
  - d. *Where there is no five-year period of continuous beneficial use as defined per Section 3 above*, ACQ cannot be calculated and the application cannot be processed.

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<sup>1</sup> Parties asserting sufficient cause for nonuse under RCW 90.14.140(1) must prove that their nonuse has occurred as a result of any one of the listed sufficient causes in RCW 90.14.140(1)(a) through 90.14.140(1)(l). RCW 90.14.140(2) automatically exempts parties asserting nonuse under any of the listed exemptions in this section.

5. “Estimated” or “Actual” Consumptive Use: For all practical purposes, every calculated ACQ is an estimate. Always be aware of the limitations in the data and the resulting error in the analysis. Ecology’s water measurement rule (Chapter 173-173 WAC) provides for certain flow meter errors up to ten percent. If questions involving measurement error arise, permit writers are encouraged to seek technical assistance from qualified technical staff.
6. Return Flow Calculation: Use the WIG, WSU AgWeatherNet, or other crop consumptive use estimates to determine evapotranspiration rates for crops. Use Department of Health, water system planning, or other data and literature to estimate consumptive use for other “units” (i.e. people, cows, etc.). Compare total use to consumptive use estimates. If the total use is less than or equal to the consumptive use, then it may be reasonable to assume nearly all applied water was consumptively used (i.e. deficit irrigation). Use the site inspection to gather information on application methods and system infrastructure to determine the extent of conveyance losses or application inefficiencies. All systems leak. Subsurface leaks are generally considered nonconsumptive because they occur below the root zone. If the total use is far in excess of the consumptive use, then an adjustment may be made for application efficiency that is consumed (i.e. some water from sprinklers evaporates). GUID-1210, manufacturer’s data, and research literature can provide specific estimates of efficiencies that can aid in the return flow calculation.
7. Averaging the Two Years of Greatest Use: Once the “most recent five-year period of continuous beneficial use” of the water right has been selected, the return flow from each year is subtracted from the estimated annual quantity diverted or withdrawn, and the two years of greatest consumptive use are averaged. The statute is protective of the environment and existing rights in that, unless the consumptive use has not varied, then the consumptive use after the change will be less than the historic peak consumptive use by virtue of a simple mathematical two-year average. This averaging, and indeed the quantification of the consumptive portion of the right, does not alter or diminish the total water right, but rather restricts the consumptive nature of the right after the change. The permit writer has discretion to add a reasonable return flow for the new use, provided that the quantity does not exceed the authorized amount of the water right and can be reasonably measured.
8. Identifying the Annual Consumptive Quantity on Water Rights: The calculated ACQ of the water right should be identified on the face of any superseding documents issued for the water right. The ACQ should also be identified as a condition of approval in the report of examination and the permit (e.g. consumptive use shall not exceed X acre-feet). If a consumptive use limit only applies to certain lands authorized by the water right (e.g. in the case of spreading of a partially-perfected groundwater permit), then the lands to which the consumptive use limit applies should be clearly identified on the authorization, and the authorization shall include provisions requiring the permittee to demonstrate compliance with the consumptive use limit as a part of annual metering submittals.

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Special Note: *These policies and procedures are used to guide and ensure consistency among water resources program staff in the administration of laws and regulations. These policies and procedures are not formal administrative regulations that have been adopted through a rule-making process. In some cases, the policies may not reflect subsequent changes in statutory law or judicial findings, but they are indicative of the department's practices and interpretations of laws and regulations at the time they are adopted. If you have any questions regarding a policy or procedure, please contact the department.*