

UTC Draft Incremental Hydro Language:

(3) All eligible renewable resource generation and all renewable energy credits used for utility compliance with the renewable energy standards must be registered in WREGIS, regardless of facility ownership.

(7) **Incremental hydropower calculation.** A utility must use one of the following methods to calculate the quantity of incremental electricity produced by eligible efficiency upgrades to any hydropower facility, regardless of ownership, that is used to meet the annual targets of this section.

(a) **Method one.** An annual calculation performed by:

(i) Determining the river discharge for the facility in the target year;

(ii) Measuring the total amount of electricity produced by the upgraded hydropower facility during the target year;

(iii) Using a power curve-based production model to calculate how much energy the pre-upgrade facility would have generated under the same river discharge observed in the target year; and

(iv) Subtracting the model output in (a)(iii) of this subsection from the measurement in (a)(ii) of this subsection to determine the quantity of eligible renewable energy produced by the facility during the target year.

(b) **Method two.** An ~~annual~~ application of a percentage to total production performed by:

(i) Determining the river discharge for the facility over a historical period of at least five consecutive years;

(ii) Using power curve-based production models to calculate the facility's generation ~~under the river discharge of each year~~ in the historical period for the pre-upgrade state and the post-upgrade state;

(iii) Calculating the arithmetic mean of generation in both the pre-upgrade and post-upgrade state ~~(s) over for~~ the historical period;

(iv) Calculate a factor by dividing the arithmetic mean post-upgrade generation by the arithmetic mean pre-upgrade generation and subtracting one; and

(v) Multiply the facility's observed generation in the target year by the factor calculated in (b)(iv) of this subsection to determine the share of the facility's observed generation that may be reported as eligible renewable energy.

Commented [m1]: Chelan PUD: I spoke with Andrea Coon at WREGIS on 10/6/14 and she helped clarify a couple of items. First of all no matter what method is used generation will need to be reported on a monthly basis for each generating unit. The standard reporting protocol does require an entity to report generation within 75 days of the period of generation, however there is a way to report generation outside of this timeframe under what is called a "prior period adjustment." Note prior period adjustments cannot go back any further than 2 years.

2015 example: Under this method an entity would register their generating units and not do any monthly reporting throughout 2015. At some time in 2016 the entity would complete their 2015 calculation and upload the monthly generation for each unit. The last step required is to enter a % split for each unit/month which determines the appropriate amount of incremental hydro. This % split is calculated by the entity but would have to be confirmed/audited by SAO/UTC depending on whether the utility is an IOU or consumer owned entity. **Consideration should be given for the timing of this confirmation to ensure entities can use the incremental hydro for compliance with their renewable energy targets.**

Commented [m2]: Chelan PUD: WREGIS requires reporting by generating unit for large hydro projects so while Method 2 calculates a factor that is calculated at a project level it will get applied on a monthly basis by unit. The calculation is based on an annual calculation but the resulting % would get applied on a monthly basis. Entities utilizing this method could follow the standard WREGIS operating guidelines for reporting generation as the factor would be known in advance.

Commented [m3]: Chelan PUD: These language edits to Method two and Method three were made due to Chelan's calculation of an average water year using all available historical flows. This average water year is then used to calculate pre-upgrade generation and post-upgrade generation. The difference between the two numbers is the incremental hydro. Please see memo regarding this issue for more information.

(c) **Method three.** A utility may only use method three to demonstrate compliance for a target year after 2017 by commission order. Method three is a one-time calculation of the quantity of renewable energy performed by:

(i) Determining the river discharge for the facility over a historical period of at least ten consecutive years;

(ii) Using a production model to calculate the facility's generation in megawatt-hours under ~~the river discharge of each year in the~~

(iii) Calculating the arithmetic mean generation of the pre-upgrade and post-upgrade state(s) ~~over for~~ the historical period in megawatt hours;

(iv) Subtracting the arithmetic mean pre-upgrade generation from the arithmetic mean post-upgrade generation to determine the amount of eligible renewable generation for the target year; and

(v) In the utility's 2017 renewable portfolio standard report, providing an analysis comparing the amount of incremental hydropower the utility reported in the five previous years using method three to the amount of incremental hydropower the utility would have reported over the same period using one of the other two methods.