

322 S. Green Street, Suite 300  
Chicago, Illinois 60607  
**T** : 773.269.4037  
**F** : 888.335.3261  
ElevateEnergy.org



**ELEVATE ENERGY**  
Smarter energy use for all

To: Technical Advisory Committee  
From: Elevate Energy  
Re: Electricity Savings from Reduced Water and Wastewater Transport System Use in TRM  
Date: April 2018

At the March 27, 2018 meeting of the Technical Advisory Committee (TAC), the group discussed the inclusion of an energy-per-gallon factor in the TRM that accounts for the savings from water-saving measures that reduce the energy used to collect, treat, and distribute potable water, as well as reduce the energy needed to collect and treat wastewater. At the meeting, a concern developed that there could be a double counting of savings when calculating the TRC from adding this factor to the TRM. This memo explains the proposal further, clarifies that it concerns only TRM calculations and not TRC calculations, and shows that the proposal does not result in double counting of any savings.

#### The Proposal

Elevate Energy is proposing an energy-per-gallon factor to account for the reductions in energy needed to collect, treat, and distribute potable water and wastewater, that occur when less water is used at the customer's premises. This factor would be applied to any measure that currently has a water impact calculation in the TRM and would more accurately reflect the energy savings from water saving measures installed by both electric and natural gas utilities. Natural gas utilities would merely convert this electricity savings, on a btu-to-btu basis, to an equivalent savings of natural gas, for use in their savings calculations.

#### Benefits of the Proposal

A more complete accounting of energy savings associated with water savings could result in significant benefits to Illinois utility customers in that it may encourage utilities to consider new water conservation-focused measures. A closer association between measures that save multiple resources (e.g., electricity, natural gas, and water) benefits Illinois customers by creating efficiencies in program delivery, reducing measure costs, and expanding the total benefits received. Also, given how very few Illinois utility customers have access to robust water conservation programs, presenting a more accurate accounting of energy costs associated with saving water in the TRM could result in these customers gaining access to water-savings incentives and programs through their electric and natural gas utilities.

#### The Existing TRM Calculations

The existing TRM does not include any mechanism by which to count the reductions in energy use when the local water and wastewater utilities pump less water coming to and from the customer's premises because a natural gas or electric utility has installed a water-saving measure there. These savings are a natural result of the installation of these measures and so

utilities should be able to count these savings toward their statutory efficiency goals when they install water saving measures.

For example, the TRM savings calculations for electric and natural gas savings from low-flow showerheads (TRM v. 6.0, vol. 3, Sec. 5.4.5 at Pg. 188-92) multiply the energy per gallon of hot water supplied by each fuel by a number of factors that determine how many gallons flow through the showerhead. The calculation of energy per gallon factors in:

- The specific weight of water,
- Water's heat capacity,
- The assumed temperature of the water at the water heater,
- The assumed temperature of the water entering the house,
- The recovery efficiency of an electric or natural gas water heater, and
- A btu-to-btu conversion factor.

The calculations do not include any additional factor related to energy used outside the home to supply the showerhead with water or process the resulting wastewater.

The TRM Manual includes a Water Impact Calculation in the TRM measure characterizations for water-saving measures, which calculates the gallons of water saved by the measure. (TRM v. 6.0, Vol. 1, Sec. 2.2. at Pg. 24 (general template); TRM v. 6.0, Vol. 3, Sec. 5.4.4. at Pg. 185-85 (Aerators)). However, a search of relevant measures in TRM Section 5.4, Hot Water End Use measures, indicates that energy used for avoided off-site collection, treatment, and distribution of water and wastewater is not included in any energy savings calculation for water-saving measures in the current TRM.

#### The Existing TRC Calculations

The TRM Manual includes parameter values for "water and other resources savings" to support cost-effectiveness calculations, which must include avoided costs associated with reduced water consumption. (IL Energy Efficiency Policy Manual, Pg. 23; TRM v. 6.0, Vol. 1, sec. 1.4.0. at Pg. 20). The Water Impact Calculations, which determines how many gallons have been saved, helps determine the TRC-test benefits of water-savings measures. Our understanding, however, is that TRC calculations are a function of the Water Impact Calculation and a price of water and wastewater services, which may include the cost of energy used to collect, treat, and distribute water and wastewater. Consequently, we understand that there may be a double-counting issue in the current TRC calculations and agree that this issue would be best addressed at the Stakeholder Advisory Group's Policy Committee.

#### Recommendation to Proceed on Parallel Paths

The need for clarity in the TRC calculation should not prevent the addition of an energy-per-gallon factor to the TRM, because it is independent of the TRC calculation, is used for an entirely different purpose, and is not in danger of improper double counting. The TRC calculation, while it may have some overlapping terms, does not determine the value of the TRM savings calculation. The TRC benefits calculation is used to determine if a measure is appropriate for inclusion in a program portfolio, while the TRM calculations determine how much savings can be counted toward the utilities' statutory goals. And, energy captured by the proposed factor is not currently included in the TRM manual's savings calculations. Consequently, including a factor to account for the energy used to collect, treat, and distribute water and wastewater would not result in artificially inflated, or double-counted, savings, but would instead make that

calculation more accurate by ensuring that energy savings caused by the utilities' installation of a water-savings measure are counted toward the utilities' statutory goals.

At the end of the TAC call on March 27, 2018, the group decided to take the issue of an energy-per-gallon factor to the full SAG for a policy discussion, citing the concern that there may be some double counting of benefits in the proposal. As discussed above, this concern is only relevant to the TRC calculation, and not the TRM savings calculation. Elevate Energy recommends that the discussions of the TRC cost-benefit and TRM savings calculations proceed on parallel paths, so as not to unnecessarily delay the addition, and use, of a more accurate TRM savings calculation. Elevate Energy recommends that the TAC take up the inclusion of an energy-per-gallon factor, which accounts for the energy used to collect, treat, and distribute water and wastewater, for the TRM savings calculations again at its next meeting.