



## The Water-Energy Nexus and Geothermal Exchange

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### Abstract:

Water-Energy Nexus” is a term used to describe the interdependence between water and energy in our lives. In the development of master planned communities, the Water-Energy Nexus is front & centre, and has yet to realize its full potential. As an example, the US Department of Energy estimates that 350 billion kilowatt-hours per year of energy paid for by its citizens goes down the drain. That is just the beginning.

In our homes, offices and buildings, we are paying to simultaneously heat and cool different areas and systems. Beyond our buildings there are infrastructure processes going on outside of the building that could easily be put to use in the Water-Energy Nexus.

Present day water and energy systems are interdependent. Water is used in all phases of energy production and electricity generation. Energy is required to extract, convey, and deliver water of appropriate quality for diverse human uses, and then again to treat wastewater prior to their return to the environment. An integrated, strategic approach can help us to address regional water-energy issues and also have national and global impacts. Enhancing and integrating data and models will better serve investors, the utilities, and the public.

### Biography:

After serving in the US Navy nuclear power field, Jay Egg began a career in mechanical design engineering & contracting. Now, as an expert consultant Jay sits on several technical code committees internationally, and is currently engaged as a member of the Legionella Task Group for the 2024 IAPMO Uniform



Mechanical Code. Jay has co-authored two McGraw-Hill Textbooks focused on geothermal HVAC technologies, and continues to write curriculum and lecture on the merits of Clean Heating and Cooling technologies.

### Recent Publications:

1. <https://www.jstor.org/stable/5419>
2. <https://sora.unm.edu/sites/default/files/journals/conductor/v086n03/p0352-p0353.pdf>
3. [https://journals.lww.com/co-allergy/Abstract/2011/06000/Quality\\_of\\_life\\_in\\_food\\_allergy.14.aspx](https://journals.lww.com/co-allergy/Abstract/2011/06000/Quality_of_life_in_food_allergy.14.aspx)
4. <https://pubs.acs.org/doi/abs/10.1021/ar950039m>
5. [https://ir.library.oregonstate.edu/concern/open\\_educational\\_resources/8910jv041](https://ir.library.oregonstate.edu/concern/open_educational_resources/8910jv041)