

Abstract Submitted
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Multi-Discipline Collaboration for Sustainability in Heating Buildings CHRISTIANA BIRCHAK¹, University of Houston-Downtown — It was a dark and stormy night. The storyteller said, “Let us each tell a story.” The physicist expounded, “Capture heat from rain on roofs to melt stored ice. Re-freeze melted ice with heat pumps. My new through-wall, multi-phase, mass-flow meter controls collecting, storing, transferring and pumping heat.” At dawn, the engineer explained, “Design a system to collect roof-heat from rain, solar and wind inputs. Heat is stored in freeze-thaw tanks and in soil under buildings and driveways.” The architect adapted the new designs to beguile builders with plans for zonal heating that offers rapid zonal recovery, on demand. The businessman spun a tale of a new industry to mass produce affordable systems. The storyteller next instructed the team, “Make it so.” It was a dark and snowy night five years later. The homeowner said, “My heat pump uses electricity from wind power to pump two thirds of my heat using stored energy from rain, sun, wind and soil.” Sustainable heating of buildings will not be mythical if physicists develop new models for fluid motion and collaborate on educating other team members.

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