



Seasonal Solar Thermal Storage

Presented by Philip Hayes, Alyeska Pipeline

Diurnal solar thermal systems are a mature technology and often leave an abundant supply of surplus energy once needs are met. Seasonal Thermal Energy Storage Systems are an active area of research for bridging the gap between solar supply and demand. Currently, such systems are not recommended for residential applications, especially in cold climate zones. However, recent research shows that with the right equipment, a properly designed system is financially advantageous and could significantly reduce the heating bill. The presentation will provide an overview of industry design guidelines and how they can be improved to address cold climates. Additionally, solar thermal collector equipment and storage methods will be discussed, focusing on methods that are most applicable to residential applications. Lastly, an overview of the current state of research into the topic will be presented.

Philip Hayes, P.E. received his M.S. in Mechanical Engineering from the University of Alaska Anchorage in 2017. He researched Seasonal Thermal Energy Storage Systems in residential applications for his thesis, **Modeling and Experimental Verification of Seasonal Solar Thermal Energy Storage**. He currently works full time in Anchorage, Alaska and continues to research the topic of Seasonal Thermal Energy Storage.

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