

## MEMBERSHIP SPOTLIGHT



AMERICAN  
**SOLAR**  
ENERGY SOCIETY

### **M. Keith Sharp**

#### **ASES Life Member**

Emeritus Professor, ASME Fellow, PE,  
Department of Mechanical  
Engineering, University of Louisville



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### **What has been your involvement with ASES?**

My master's thesis in 1978 was on stratified storage for solar water heating systems. It was around then that I joined ASES. ASES was heavily involved in solar buildings, and hosted the National Passive Solar Conference. I have presented at many ASES conferences throughout the years.

### **What personal or professional accomplishments are you most proud of?**

I developed a computer model for designing buildings to be entirely ambient-conditioned. Our new house designed with the model has remained comfortable for over two years, with only an occasional fire in the fireplace to supplement passive solar heating and nighttime ventilation cooling (see my National Solar Tour presentations). My article in Solar Today Fall 2023 is about four historic houses and two modern ones that achieved 100% (or nearly so) ambient conditioning. Many are not aware of the technology, but it is ready and able to save energy, reduce carbon emissions, and improve resilience and equity.

I also organized a 2023 workshop in Washington DC on ambient energy for buildings. A white paper from the workshop will likely be published in 2024. There is a resurgence of interest in ambient energy for buildings that is expected to result in changes to our national energy policy and research priorities, building codes and standards, and curricula throughout education. I am proud to be a part of it. I am hoping that ASES will also play an important role.

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#### **In what ways are you involved in renewable energy and sustainability?**

Buildings are critically important in solving our climate problems, because they consume nearly half of total US energy and are responsible for a large fraction of carbon emissions. The problem is getting worse since built floor area is expected to double by 2060. The current strategy of electrification and energy efficiency is insufficient because the transition to an all-renewable grid is too slow and too expensive. Over three quarters of building energy can be met by ambient sources (from the sun, sky, air, and ground).

My current research focus is on heating and cooling, the largest of these loads. Norm Saunders' guidelines to reach 100% (1. Super-insulation, 2. Solar gains, 3. Thermal mass) still apply. However, compared to classic passive solar buildings, modern ambient-conditioned buildings are designed with even more insulation. This allows the use of smaller south-facing windows and less thermal mass, which makes achieving high performance more convenient and less expensive.

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#### **Fun question: What historical person would you like to have dinner with?**

I would love to have been around the campfire in Yosemite with John Muir and Teddy Roosevelt when they were discussing the creation of our first national parks.

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