




# Definition Guidelines

- Grid-Enabled: Legislatively Mandated, 75+ Gal. ETS Water Heater, Higher EF, Activation Lock functionality
- Grid-Responsive: Legacy Load Management, Slow Speed/One Way Communication, On/Off
- Grid Interactive: High Speed/2 Way Comm.



# **From Legacy Systems to GIWH and Community Storage!**

Steven Koep, National Utility Sales Manager –  
Vaughn Thermal Corporation,  
Co-Chair of PLMA GIWH Interest Group



**Or....What happens when**

# **The 'Forgotten Appliance' Meets the Internet of Things!**

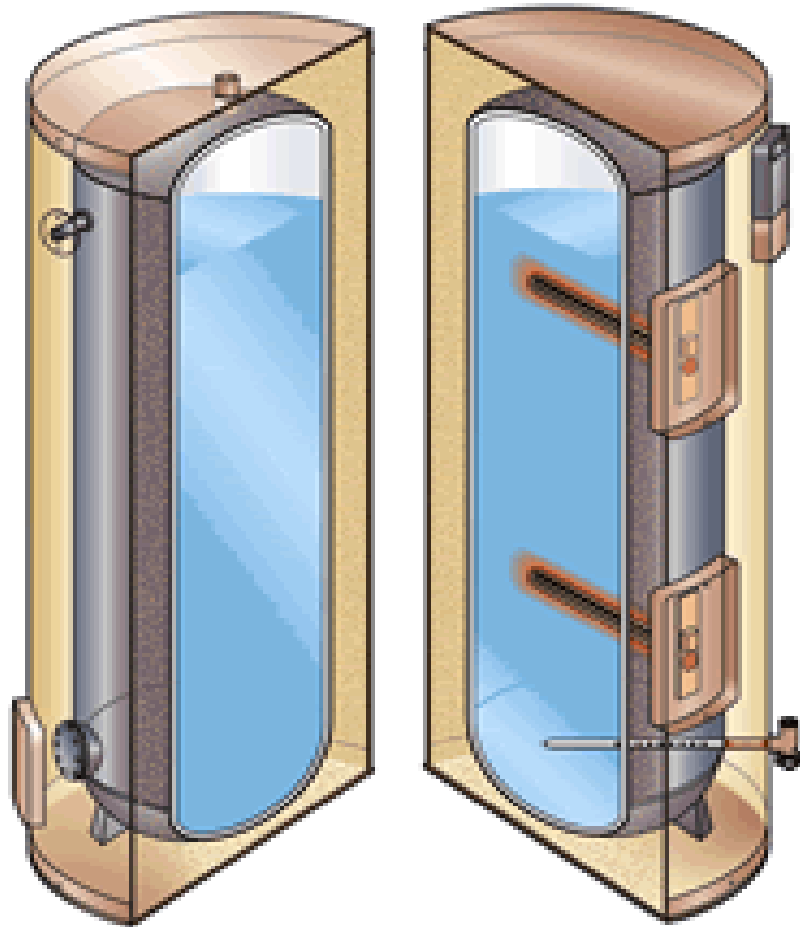
- **GIWH : Grid-Interactive Water Heating**
- **Demand Response and Strategic Energy Sales**
- **Program Options & Financial Opportunities**
- **No More 'Dumb' Water Heaters!!!**



# Introduction – How did we get here?

- Energy Star
- Integrated HPWHs
- DOE Rulemaking, April 2010
- **Grid-Interactive Electric Water Heating – GIWH!**
- Rising Profile of Renewable Energy Storage
- March 19, 2015 – Testify to House SubCmte
- April 16, 2015 – DOE Final Rule in Effect
- April 21, 2015 – Congress Passes Bill
- April 30, 2015 – President Signs Bill establishing ‘Grid-Enabled’ ETS Water Heater Category!

# 'Grid-Enabled' ETS Water Heater





# **Embrace The GIWH Opportunity or... What is GIWH & Why Should I Care?**

- Change the technology and/or  
Change the source energy!
- 50M+ Residential Electric Water Heaters –  
Most will not convert to HPWH or Solar!
- 2-Way Communication is the Key.....  
To Grid Connectivity and Ancillary Services
- Launch PLMA GIWH Interest Group
- Follow The ‘Renewable’ Logic....

# GIWH - 'Grid-Interactive' Water Heater



Your electric storage water heater is a thermal battery that can help integrate renewable energy into the grid.



America's Electric Cooperatives

The illustration shows a vertical black unit with an orange top section. The top section has a white plus sign on the left and a minus sign on the right. Below the orange section is a yellow rectangular area with horizontal lines, and two grey rectangular panels. At the bottom, there are three orange dots and a grey circular component. To the right of the unit are five blue water droplets.



## Dr. Steve's 'Renewable' Logic

- **Renewable energy is a good thing!**  
We should make all that we can!
- **Using renewable energy is a good thing!**  
We should efficiently use all that we can!
- **Unused renewable energy is NOT a good thing!** We should store and utilize all of the available low-cost and no-cost renewable energy that we can!





# Understand where we're headed...

- Support and utilize GIWH as a viable carbon reduction strategy
- Consider other market delivery models to reduce the first-cost hurdle
  - Water Heater Leasing options
  - Hot Water as a service
- Encourage HPWH technology - where it makes the most sense



# Retain/Grow Market Share

- Develop new water heater program options!
- Better rebates for better products!
- Introduce a water heater leasing program!
- Look to the future with grid-interactive, renewable storage features!
- Think “**Community Storage**”!!!



# Defining Success

- New product classification for Large-Capacity Grid-Enabled ETS Water Heaters
- MW-scale GIWH implementation projects
- Hot Water as a Service
- HPWH achieving 5% market share by 2025?
- GIWH as the foundation of 'Community Storage'



# **PLMA BTMS Interest Group (BTMS > Behind-The-Meter Storage)**

- PLMA – Peak Load Management Alliance
  - [www.peakload.org](http://www.peakload.org)
  - Mission Statement
  - Collaborative Market Development
- Opportunity for Utility Leadership
- Realize the customer, utility, and community value of GIWH
- **The Community Storage Initiative!**



# **Thank You!**

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