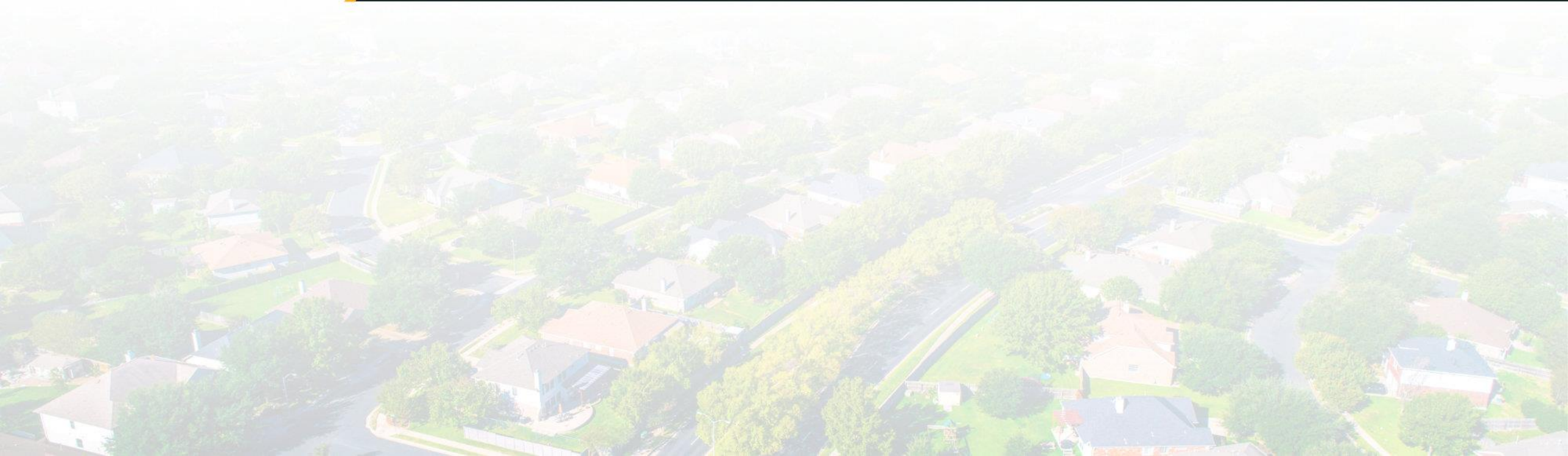




# Beneficial Electrification: The Future Is Electric!



# Beneficial Electrification League (BEL)





## Introduction!





# Electrification Futures Study (EFS) Overview



**Goal:** explore potential & impact of electrification of U.S. economy; power sector focus



EVOLVED  
ENERGY  
RESEARCH



Multi-year research effort with development of a series of publications, tools, and data, to be released and finalized as the project continues.

# EFS Scenario Descriptions



## Reference

- No dramatic technological, societal, or policy changes
- Electro-technology adoption follow current trends
- (EIA AEO Reference Case)

## Medium Electrification

- Plausible but not transformational changes
- “Low-hanging fruit” end-uses see accelerated adoption
- Limited, niche market adoption elsewhere
- Technical, economic, and consumer preference barriers remain

## High Electrification

- More favorable set of conditions for electrification
- Aggressive adoption where many barriers are overcome
- Not a “technical potential”

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# Beneficial Electrification (BE)



The application of electricity to end-uses that would otherwise use fossil fuels and where doing so satisfies at least one of the following conditions, without adversely affecting the others:

- *Saves consumers money over time*
- *Benefits the environment and reduces green house gas emissions*
- *Improves product quality or consumer quality of life*
- *Fosters a more robust and resilient grid*





## Beneficial Electrification!

- Environmentally Beneficial Electrification – Nov. 2015, July 2016
- ‘Beneficial Electrification’ RAP Whitepapers & Webinars
- PLMA ‘Beneficial Electrification’ Webinars & Workshops
- EPRI ‘Electrification 2018’ Conference
- 2018 Beneficial Electrification Leadership Forum
- Website & Resources – [www.beneficialelectrification.com](http://www.beneficialelectrification.com)
- Beneficial Electrification League – BEL
- Beneficial Electrification Ambassador (BE-A) Program



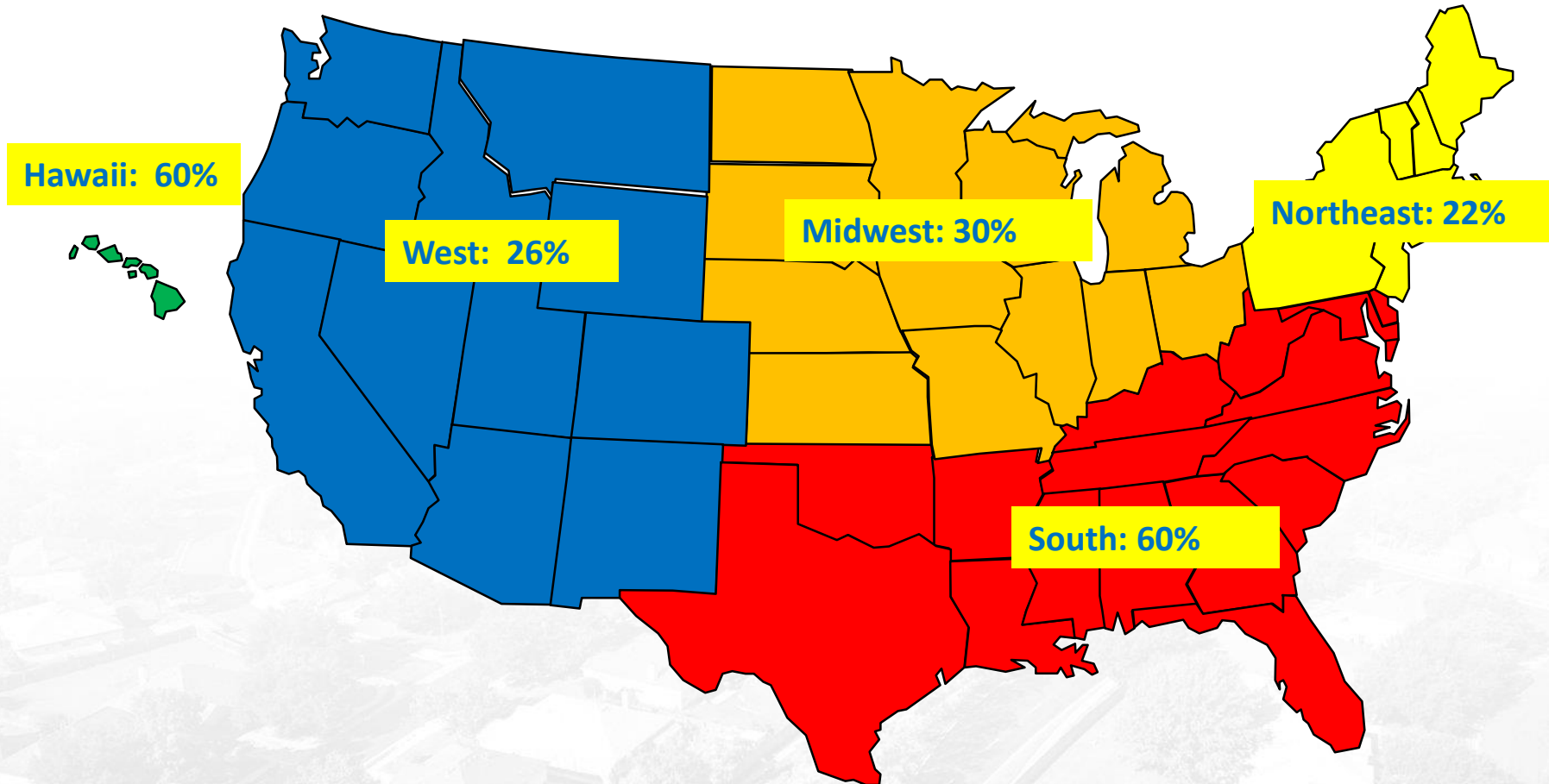
It Started With .....  
Electric Water Heating!



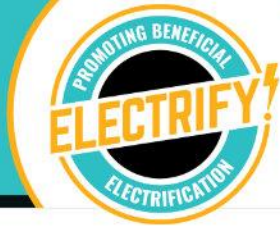
# Beneficial Electrification League (BEL)



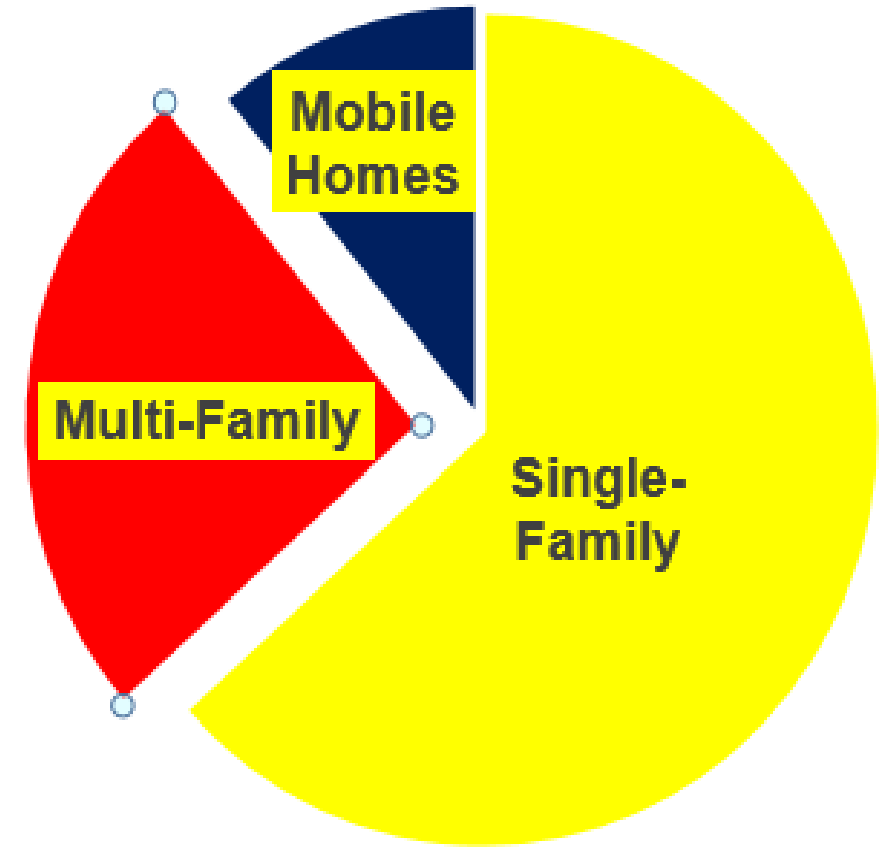
## Electric Water Heating Market Share



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45 Million Water Heaters		Total
Capacity	4.5kW/ea.	202.5 gW
Energy Storage Capacity	12kWh	540 gWh
Annual Energy	3800kWh/ea.	171 tWh



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Regulation	Zone	Jan	Feb
Locations	RTO	414	428

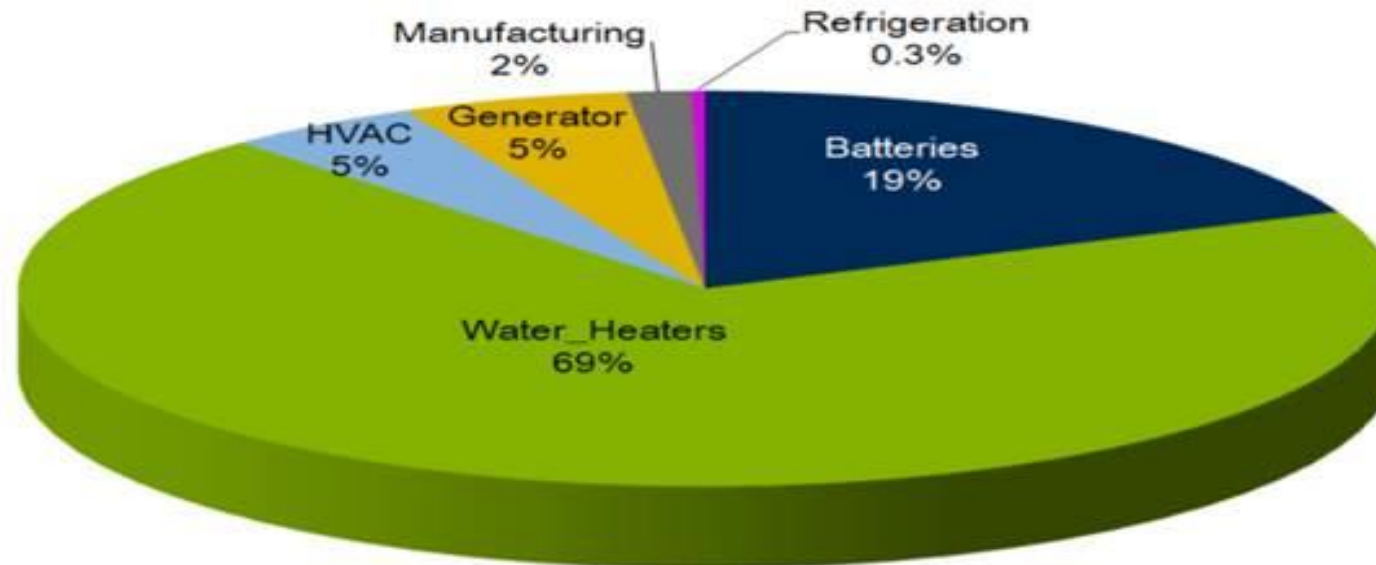
Average Number of Unique Participating Locations per Month: 421

MWs	RTO	64	65
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Average MWs per Month: 65

Capability represents total amount that may be offered. Actual offered and cleared volume may be significantly lower and is represented in subsequent figures/tables in report

Figure 10: 2017 PJM Demand Response Confirmed Regulation Registrations Load Reduction Methods





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## Recognizes:

- Electricity is getting cleaner, less carbon intensive
- Electricity production is becoming more intermittent and variable
- The electric grid is more sophisticated, more efficient, and more resilient
- Consumers are more sophisticated and expect more
- End-use technologies are more advanced, more efficient, and more wide-spread
- Climate change goals are not going away

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## Background:

- BE is the most effective and inclusive GHG reduction strategy
- To be successful, BE requires a collaborative effort
  - Utilities
  - Environmental and consumer advocates
  - Manufacturers and technology providers
  - Policymakers
- Immediate opportunities include:
  - Electric vehicles
  - Electric space and water heating
  - Commercial/industrial, and agricultural applications

# Beneficial Electrification League (BEL)



## Key Objectives:

- Create a broad stakeholder coalition
- Establish definitions and goals for stakeholders
- Build strategic partnerships
- Provide stakeholder engagement opportunities
- Identify policies that support / hinder BE
- Support BE market development
- Seek additional sponsorship and grant opportunities

## Current Activities:

- Hosting state/regional “Intro to BE” meetings
- Engaging in speaking opportunities
- Creating state/regional BE Leagues
- Promoting the BE Ambassador Program
- Providing input on policy requests
- Establishing a national BEL presence





# Public Awareness & Market Development!

# Beneficial Electrification League (BEL)



**“In this age, in this country,  
public sentiment is everything.  
With it, nothing can fail;  
against it, nothing can succeed.**



## The Times They Are A-Changin'

[Bob Dylan](#)

Come gather 'round people wherever you roam,  
And admit that the waters around you have grown,  
And accept it that soon you'll be drenched to the bone  
If your time to you is worth savin'  
Then you better start swimmin'  
Or you'll sink like a stone  
For the times they are a-changin'!



# Thank You!







# The Win-Win-Win of Beneficial Electrification!

