

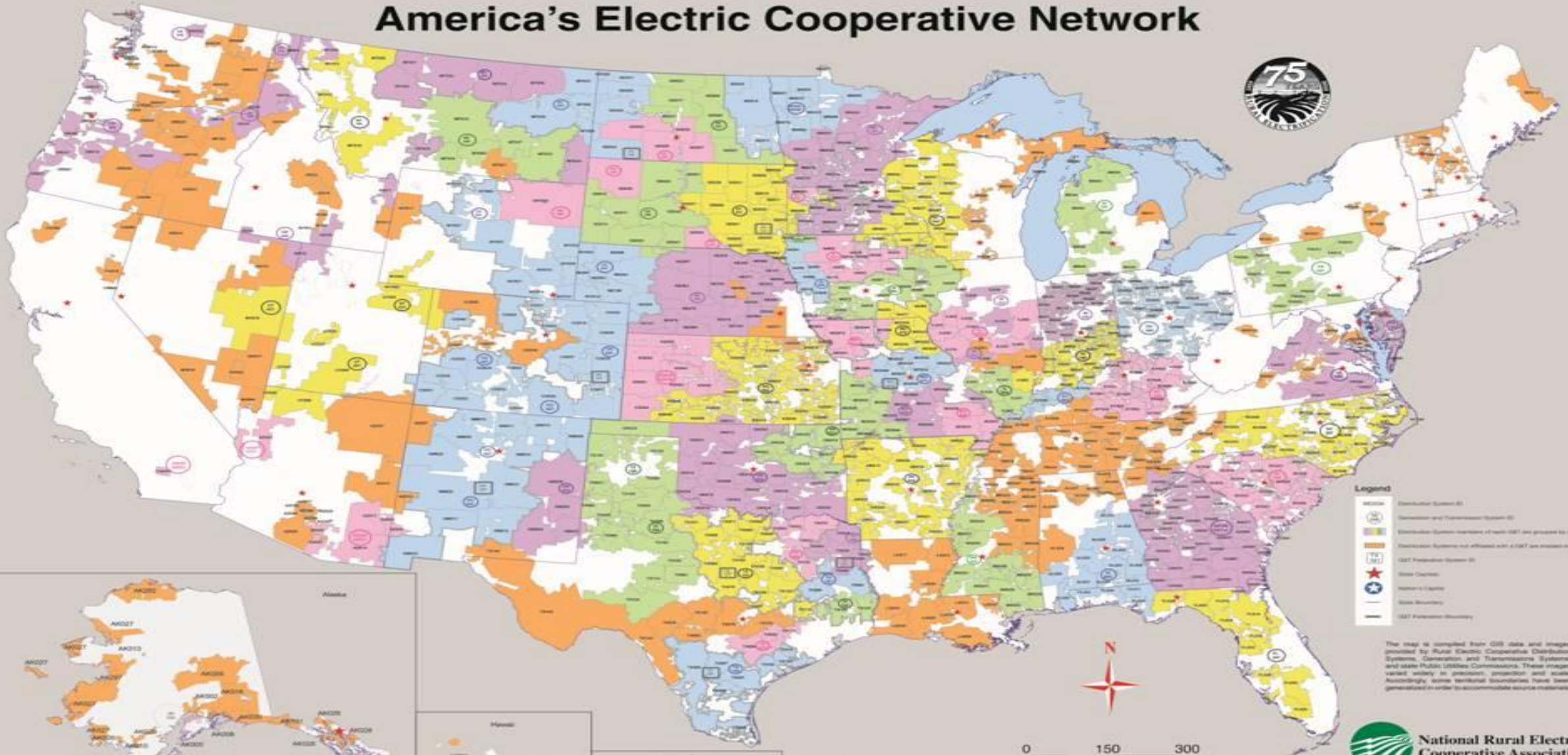
Beneficial Electrification: Changing the Way We Think About Electricity

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Keith Dennis
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America's Electric Cooperative Network



- Legend**
- Distribution System #1
 - Distribution System #2
 - Distribution System #3
 - Distribution System #4
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 - Distribution System #97
 - Distribution System #98
 - Distribution System #99
 - Distribution System #100
 - State Capitals
 - National Capitals
 - State Boundaries
 - RST Transmission Boundary

The map is compiled from GIS data and images provided by Rural Electric Cooperative Distribution Systems, Generation and Transmission Systems, and state Public Utilities Commissions. These images varied widely in precision, projection and scale. Accordingly some territorial boundaries have been generalized in order to accommodate source materials.



Cartographic design by Louise Williams
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Beneficial Electrification Opportunity / Takeaways



- Many stakeholders believe that Beneficial Electrification (BE) is key to meeting US and global GHG reduction goals – and it's compatible with a **pro-growth strategy!**
 - Emissions of generation are declining
 - Efficiency of devices is increasing
 - More flexible loads are desirable
- BE may lead to scenarios where more electricity is used, but fewer overall GHG emissions are produced.
- An opportunity for electric utilities and environmental groups to identify solutions that work well for the consumer, local communities and the environment

Introduction: What is “Beneficial Electrification?”

The Beneficial Electrification League asserts that BE includes:

The application of electricity to end-uses that would otherwise consume fossil fuels (e.g., fuel oil, diesel, natural gas, propane, gasoline) where doing so satisfies at least one of following conditions, without adversely affecting the others:

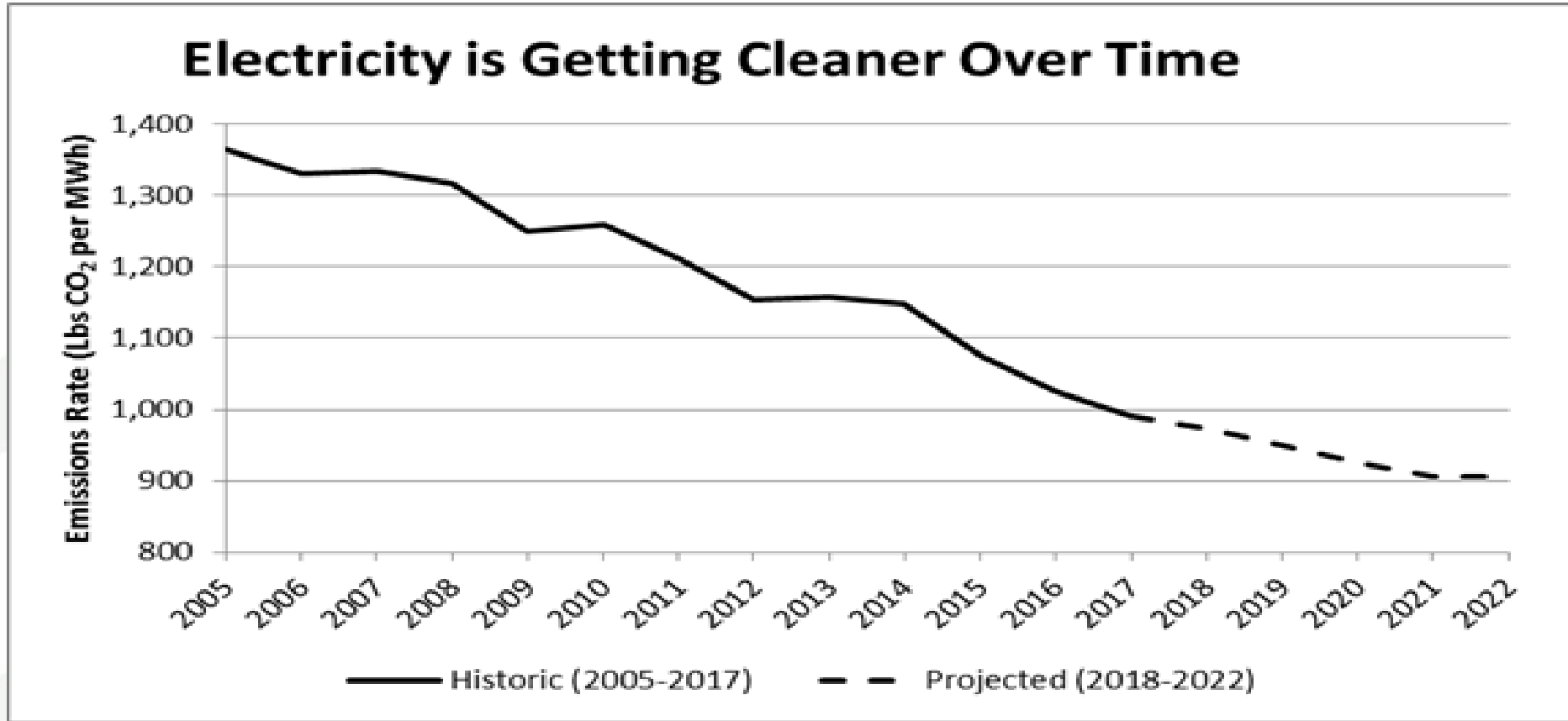
- save consumers money over time;
- benefit the environment and reduce greenhouse gas emissions;
- improve product quality or consumer quality of life; or
- foster a more robust and resilient grid.

Beneficial Electrification programs are a valuable opportunity to engage both electric utilities and environmental groups in the effort to identify solutions that work well for the end-use consumer, local communities and the environment





Opportunity for “BE” to Improve “Emissions Efficiency”



By virtue of being plugged into the grid, the environmental performance of electric devices improves over time.

Electric Technology Has Changed - Electric Agricultural Pumps and Heat Pumps



Great opportunity to incentivize electric agricultural pumps and heat pumps for space heating in rural areas!

Beneficial Electrification – Improves Product Quality



Image: Electric rock crushing using electricity in Illinois (Coles-Moultrie) increases co-op load, improves operation, and reduces air pollution

Down The Road – More Electric Tractors and Broadband/Technology Enabled Water Management

John Deere unveils latest all-electric tractor prototype for zero-emission agriculture

Fred Lambert - Dec. 5th 2016 5:30 am ET [@FredericLambert](#)

ELECTRIC TRACTOR

JOHN DEERE



Example: Steele-Waseca Water Heaters and Solar



Buy a 410 watt panel in the SUNNA project and get a free electric thermal storage water heater

- ▶ \$170 panel cost to consumer
- ▶ No sighting issues
- ▶ No maintenance issues
- ▶ Hedge against future energy hikes



Example – Dakota Electric School Bus



America's schools spend roughly \$2 billion on fuel each year for transportation.

Transitioning to electric-powered school buses could cut these costs *in half*, down to \$1 billion.



What is the Future of Smart Homes?

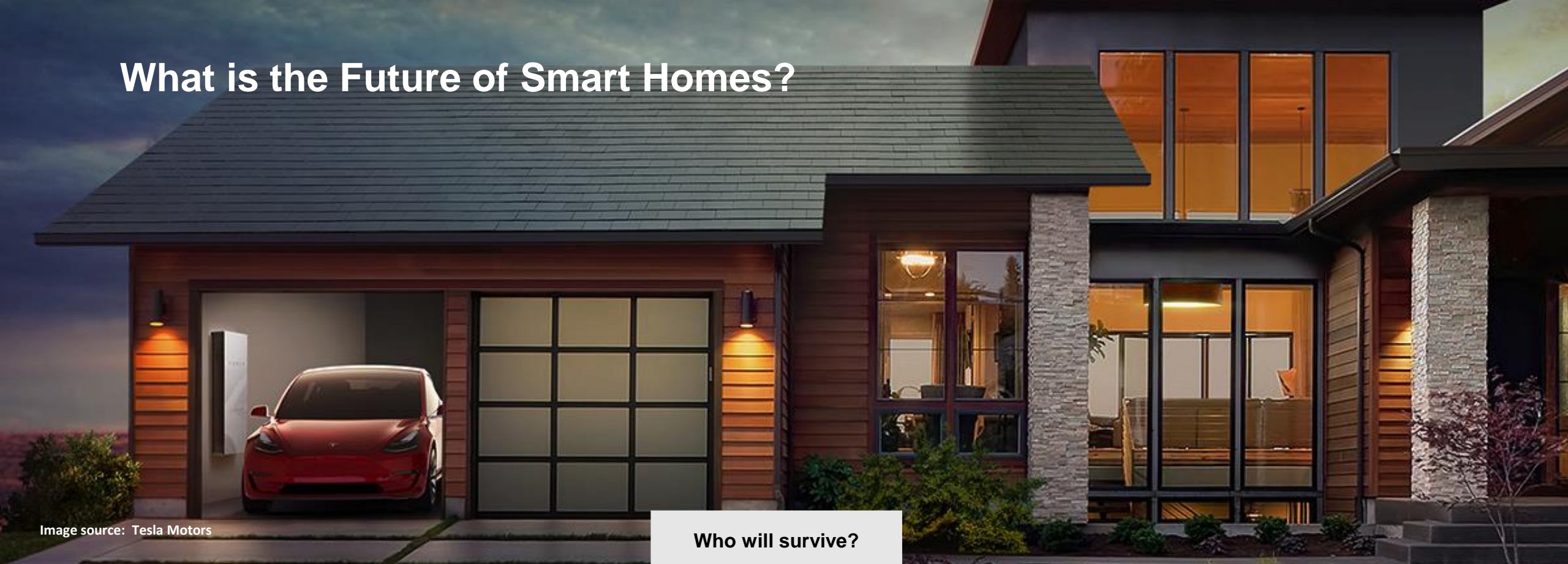


Image source: Tesla Motors

Who will survive?



HomeKit

What is Next?



Welcome the “Beneficial Electrification League”!



- A new non-profit dedicated to promoting the benefits of beneficial electrification
- www.beneficialelectrification.com
- Supporters include: Natural Resources Defense Council (NRDC), National Rural Cooperative Association (NRECA), Environment and Energy Institute (EESI), WECC, Great River Energy, Oglethorpe Power, Jackson EMC, and more.

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