Southern Company's Electrification Project

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Southern Company

WHO IS SOUTHERN COMPANY?

Alabama Power | Georgia Power | Gulf Power | Mississippi Power
Southern Company Generation | Southern Company Transmission
Southern Nuclear | Southern Power | Southern Telecom | SouthernLINC Wireless

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Quick facts about Southern Company

- Focused on serving customers with clean, safe, reliable and affordable energy
- Dedicated to developing the full portfolio of resources for America's energy future
  - New nuclear
  - 21st century coal
  - Natural gas
  - Renewables (solar, wind, biomass, hydro)
  - Energy efficiency

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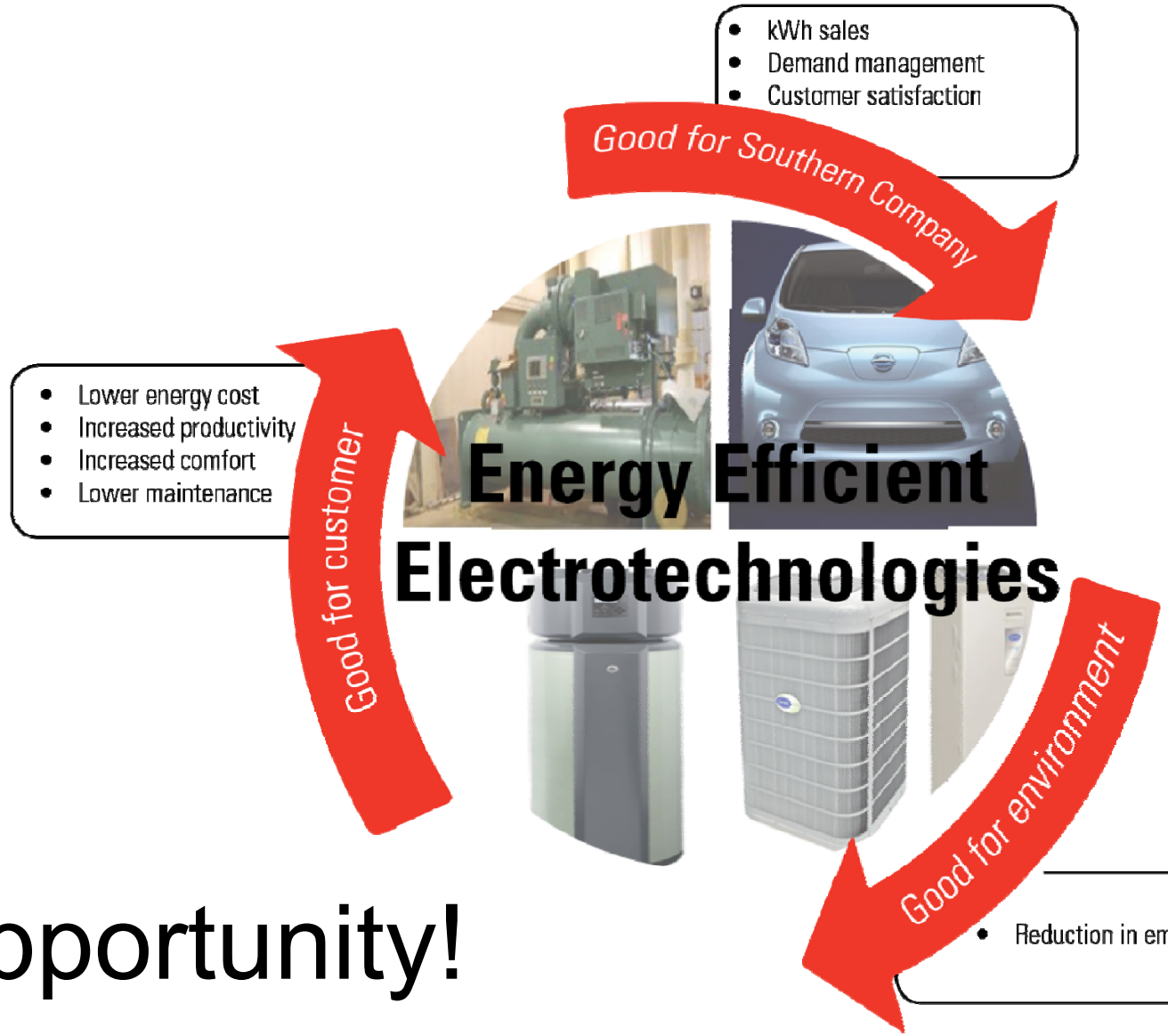
Energy Efficient Electrification



Opportunity!

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Southern Company's Deep-Dive Case Studies

Detailed market potential analysis on 4 technologies:

- √ Variable Capacity Ducted Heat Pumps
- √ Variable Capacity Roof-Top Heat Pump
- √ Indoor Pool and Dehumidification Heat Pump
- √ Heat Recovery Heat pumps for Commercial and Industrial

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Framework to Quantify Market Potential

Technical Applicability

Technical Screen

Technical Potential

Benefit/Cost Screening

Economic Screen

Economic Potential

Availability, Customer Fit, Risk

Market Screen

Achievable Potential

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Variable Capacity Ducted Heat Pumps

- **Technology**
  - Advanced technologies allow the heat pump to operate at much greater efficiency in all modes while providing heating below 20°F

- **Advantages**
  - Extremely high efficiency (SEER 18+)
  - Increased comfort
  - Significantly reduced back-up strip heat
  - Increases the geographic applicability of heat pumps to northern colder climate zones
  - Significantly reduced electric auxiliary

- **Market potential**
  - Replacement of gas air-conditioners without electrical wiring upgrade

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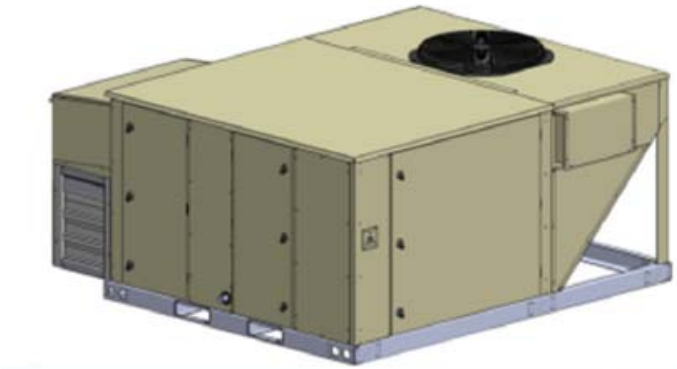
Variable Capacity Roof-Top Heat Pumps

- **Technology**
  - Advanced technologies allow the heat pump to operate at much greater efficiency in all modes while providing heating below 0°F



- **Advantages**
  - Extremely high efficiency (SEER 20+)
  - Increased comfort
  - Significantly reduced back-up strip heat
  - Significantly reduced electric auxiliary

- **Market potential**
  - Replacement of gas air-conditioners without electrical wiring upgrade
  - Northern climate zone applications

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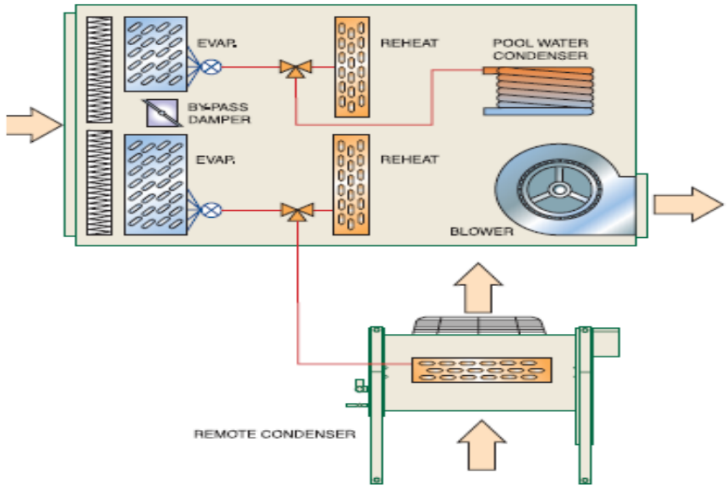
Indoor Pool and Dehumidification Heat Pump

- **Technology**
  - Provides simultaneous indoor pool heating and dehumidification



- **Advantages**
  - Very efficient (COP: >5)
  - Increased comfort

- **Applications**
  - Public facilities (county, city or municipal indoor pools)
  - Private health clubs/YMCAs
  - Hotels
  - Colleges and universities
  - Medical/therapeutic facilities

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Heat Recovery Heat Pump (HRHP)

- **Technology**
  - Captures chiller waste heat and uses HRHP to produce 150 °F water
- **Advantages**
  - Coefficient of Performance (COP): >5.0
  - Offloads the cooling tower loop
- **Applications**
  - Simultaneous cooling and hot water needs
  - Hospitals, high-rise hotels, food processing, university central plants, and many others

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