U.S. Department of Energy

Southeast Clean Energy Application Center

Promoting CHP, District Energy & Waste Heat Recovery

Quarterly Advisory Board Meeting

June 29, 2011

U.S. Department of Energy
Southeast Clean Energy Application Center

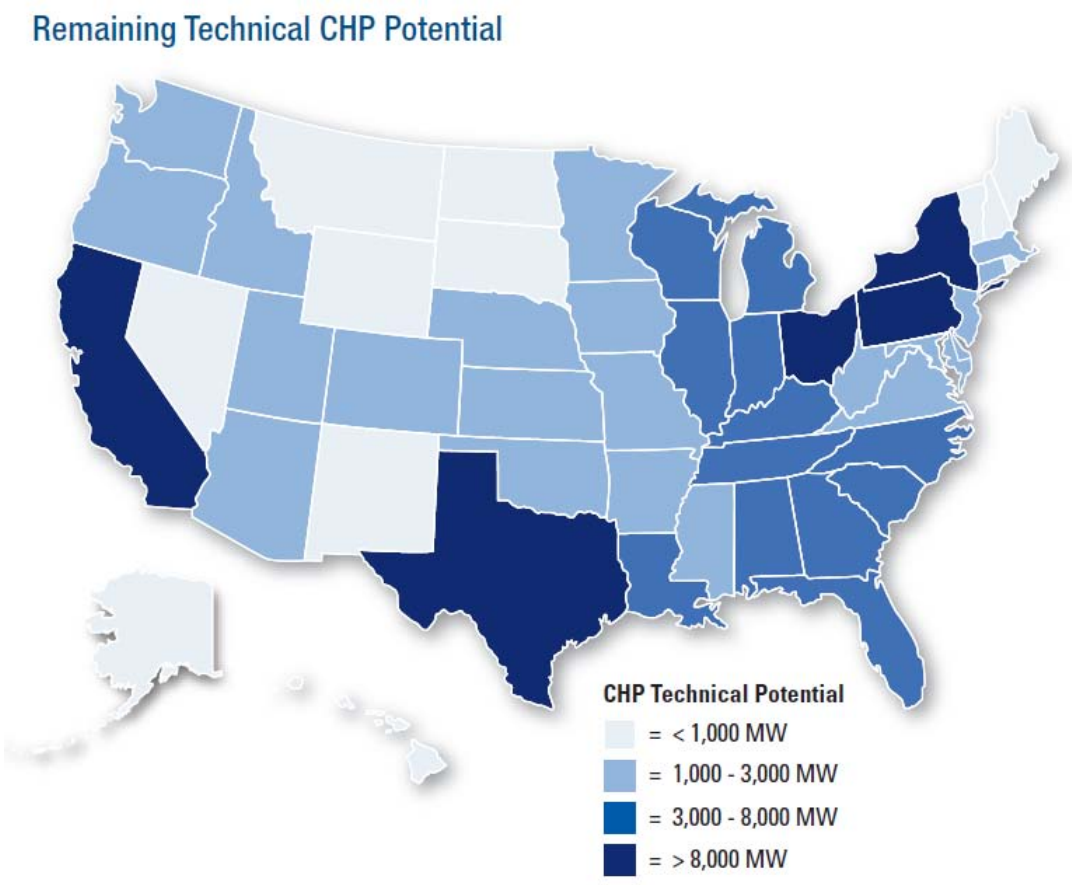
Today's Agenda

- Update on RAC Policy Efforts
- Current State of Southeast State Energy Policies
- Group Discussion: Ideal Policies to Support CHP/WHR in the Southeast

Clean Energy Technologies

- CHP: The sequential production of electric and thermal power from a single dedicated fuel source
- Waste Heat Recovery: Captures heat otherwise wasted in an industrial process and utilizes it to produce electric power. These systems may or may not produce additional thermal energy.
- District Energy CHP: Central heating & cooling plants that incorporate electricity generation along with thermal distribution piping networks for multiple buildings (campus / downtown area).

The Southeast is rich with CHP opportunities:



CHP Technical Potential for SE States from

CHP growth depends on

state policy – market signals

* source: 2008 ORNL Report “Combined Heat and Power: Effective Energy Solutions for a Sustainable Future”

Benefits of CHP to State Economies

Impact of 1,000 MW of CHP in over the 10 years?

- **Capital.** $1.5 - 2 billion of capital investment
  - Large numbers of small CHP units may replace need for a few large power plants.

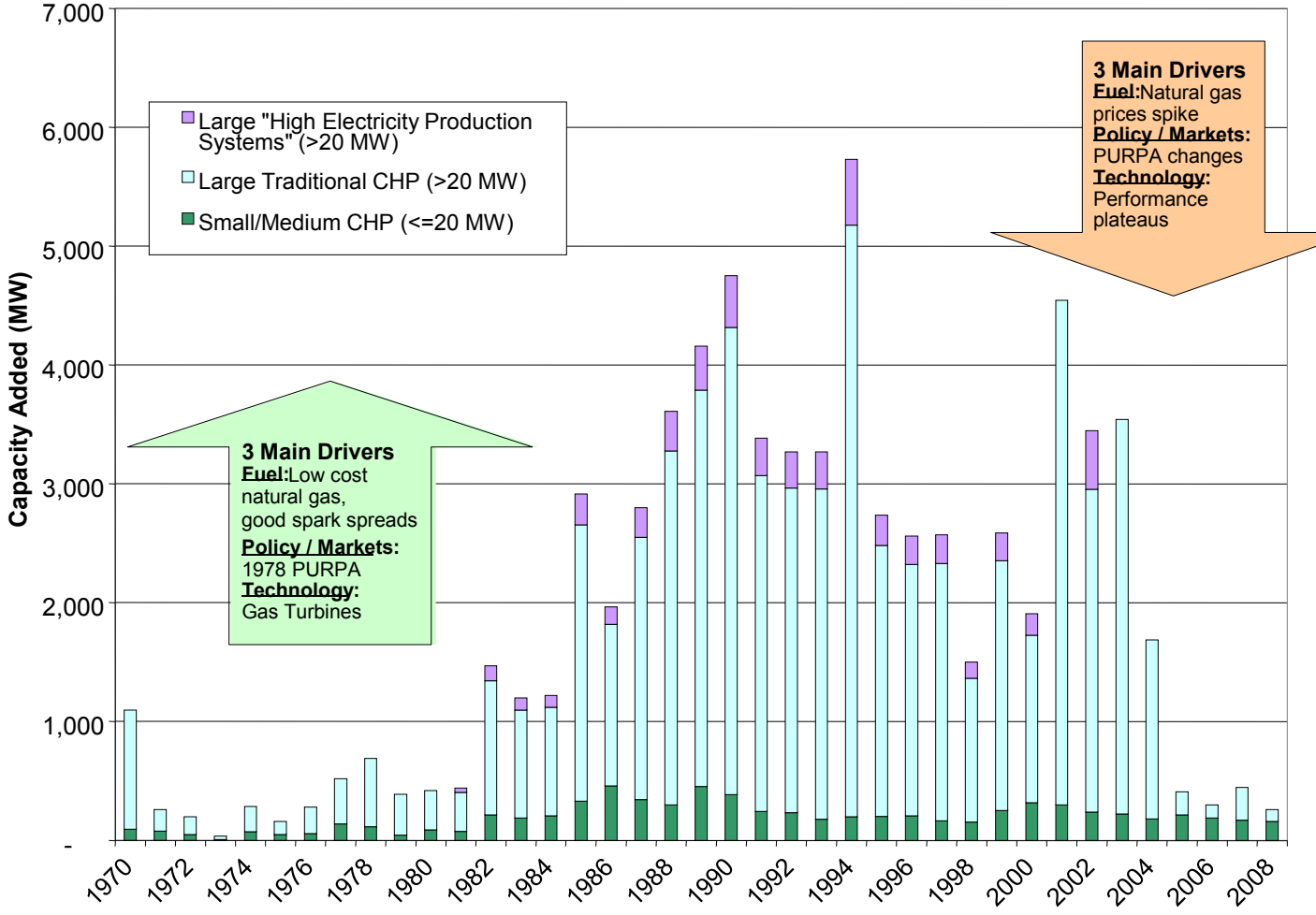
Fuel. In 2020, fuel savings of ~ $100 million per year

- Biomass, biofuel, natural gas
- Reduced importing of fuels

Jobs. What is the net impact of jobs?

- Potential of many more retained; net addition of 100s of jobs.
- Energy savings strengthen state industries and utilities

Restarting CHP Market Investment requires overcoming barriers that negatively impact project economics and risk



These Barriers include:

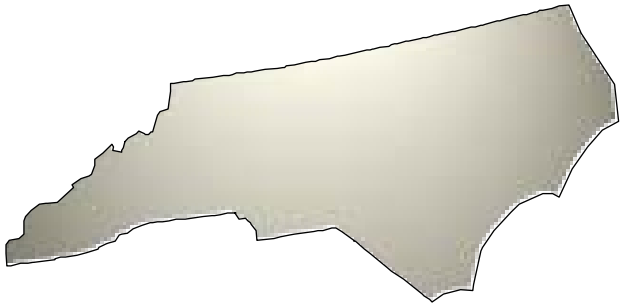
- Grid Interconnection and Regulatory Issues
- Capital and Life-cycle Cost
- Fuel Availability and Price Volatility
- Uncertainty in the future of CO_2 emissions treatment

Current NC Policy Priorities

- Achieve high market penetration with the 35% ITC.
- Push for CHP to reach a 2-3% share of the NC REPS (360-540MW contributing RECS by 2021)
- Work with investor owned utilities on incentives and asset ownership of CHP
- 3rd party PPAs for Renewables and CHP
- Inclusion of CHP as a key resource in IRP & T&D planning process
- Work with Military to implement CHP as critical infrastructure.

What are we learning in the North Carolina?

- Industry wants to use more CHP and will do so if certain changes are made to allow market access for distributed CHP – 3rd party developers.
- States energy policy is driving economic development in renewable CHP business
- Some persons at some utilities are making a business case for CHP



What is happening on in the Southeast?

- There are a variety of incentives and policies that support the development of CHP or for which CHP are eligible
- We would like to see the states can include CHP in their energy planning and support this technolgy

Southeast CHP & Waste Heat Recovery Policies and Incentives

	AL	AR	FL	GA	KY	MS	NC	SC	TN
Performance Based Incentive	●			●	●	●	● ● ★	●	●
Loans			★				●		
Grants	●				●				
Tax Exemption				●		●			●
Investment Tax Credit				●	●			●	
Portfolio Standard			● ★						
Building Standards				▲					
Net Metering		●			●			● ★	
Interconnection		●			●				
Rebates			★						
Industry Recruitment			▲						

TVA

State incentive

● CHP eligible based on renewable fuel

★ utility program

▲ Local Govt program

Tennessee Valley Authority

- Serves parts of AL, GA, KY, MS, NC, TN

Biomass Performance Based Incentives

- Generation Partners Program
  - Biomass, Landfill Gas
  - 0.5 kW – 200 kW
  - $1,000 plus $0.03/kWh above the retail rate
- Mid-Sized Renewable Standard Offer Program
  - Biomass, Landfill Gas, Anaerobic Digestion
  - 200 kW – 20 MW
  - Average $0.0561/kWh, max $0.1596/kWh

Alabama

State Loan Programs

- AlabamaSAVES Revolving Loan Program
  - For commercial/industrial projects
  - $250K - $4M loans for RE and EE retrofits
  - 10 yrs max, 2% interest rate
- Local Gov't Energy Loan Program
  - $350K - $500K loans for RE and EE projects for local gov'ts, K-12 schools, public universities
  - 0% interest for 10 yrs, must have 10 year payback

Alabama

- Biomass Energy Program
  - State grants to help pay interest on loans from private lenders for landfill gas, biomass, MSW projects
  - Max $75K, non-residential projects only

- Alabama State Energy Plan
  - Industrial Energy Program

    The Alabama State Energy Office (SEO) will promote energy efficiency in industrial facilities and participation in the DOE Industrial Technologies Program to improve processes and practices that reduce energy use and costs of operation.
  - State Building Energy Efficiency Program

    SEO will assist State agency Energy Officers with plans to reduce energy usage in State buildings at least 3% each year.

Arkansas

- Green Building Standards for State Facilities
  - Energy use in all existing state buildings must be reduced by 20 percent of 2008 levels by 2014 and 30 percent by 2017.

- Industrial Energy Technology Revolving Loan Fund
  - Low interest-rate loans for industry to implement new energy efficient measures or install renewable energy generation
  - Max $2M, interest rate varies with loan term
  - ARRA funded, runs out in 3/2012
  - Biomass, recycling waste heat, and unspecified energy efficiency measures eligible

Arkansas

- Net Metering (B in Freeing the Grid)
  - biomass and microturbines eligible
  - 300 kW max for non-residential systems
  - IOUs and Electric Coops
  - Full retail rollover, credited to utility at end of cycle
  - Customer owns RECs
- Interconnection Guidelines for NM Systems
  - Requires EDS

Florida

State Programs

- Net Metering (A) and Interconnection (B)
  - Up to 2 MW; IOUs
- Solar and Industrial CHP Sales Tax Exemption

Local Program

- Miami-Dade County
  - Tax refund for CHP Companies that based on jobs created
  - Expedited permitting for “green” buildings

Florida

Utility Programs

- Energy Efficiency Loans
  - Tallahassee
  - Clay Electric Cooperative
  - JEA
- Energy Efficiency Rebates
  - FP&L
  - JEA
  - Progress Energy
  - Tampa Electric
- JEA Clean Power Program
  - voluntary RPS 7.5%; includes biomass

Florida

Current Activity

- In 2011, State Energy Activities moved from Governor's Office to Dept. of Agriculture
- Governor Scott and Senate President Haridopolos have commissioned a study on state energy policy
- Failed RPS in 2009
  - PSC sent a draft RPS plan to be considered by the Florida legislature, never ratified
  - 20% by 2020
  - Included biomass, landfill gas, waste heat as "renewable"

Georgia

State Programs for Biomass

- Biomass Sales Tax Exemption
  - Biomass must be used to create electricity, steam, or both
- Clean Energy Tax Credit
  - 35% up to $500k
  - Just extended until 2014 (HB346)

LEED Requirements

- Atlanta- large new/renovated public buildings must be LEED Silver
- Chamblee- all public and large private development

Kentucky

- Interconnection (F) & Net Metering (B) for biomass
- Green Bank of Kentucky- Energy Efficiency Loans
  - Min $50K, 15 year payback
- Agricultural EE Grants (biomass, heat recovery)
  - 25% up to $10K
- Renewable Energy Tax Credits (biomass, landfill gas)
  - Max 50% of capital investment for systems > 1MW, >$1M
  - Sales Tax Exemption

Kentucky

Recent Activity

- Failed RPS legislation in 2009
  - 12.5% by 2020
  - Included renewably fueled CHP

Mississippi

State Programs

- State Loan Program
  - $15K – $300K
  - 3% below prime rate, 7 year repayment term
- Mississippi Clean Energy Initiative (biomass)
  - Manufacturers who invest $50 M and create 50 new jobs are exempt from income, franchise, sales & use tax for 10 years

Current Activity

- IC & NM docket at Public Service Commission

North Carolina

- Net Metering and Interconnection Standards
- REPS- 12.5% by 2021 (IOUs)
- Manufacturing Tax Credit - 25%
- Investment Tax Credit- 35%
  - CHP added in 2010
  - Up to $2.5 M for commercial, industrial, agriculture
  - Up to $10.5 K for residential
- NC Green Business Fund
  - Grants up to $500 K
- Energy Improvement Loan Program (biomass and heat recovery)
  - Up to $500 K, 1-3% interest rate, 10 year term

North Carolina

Utility Programs

- Duke Energy Standard Purchase Offer for RECs
  - $6/MWh; 5-15 year terms; must produce between 50 and 5,000 RECs/year

Other Initiatives

- NC GreenPower Production Incentive (biomass)
  - Not currently accepting bids for large biomass projects

North Carolina

Current Activity

- 2011 legislation changed Energy Policy Council to Energy Jobs Council, with shift in membership from renewable/alternative energy representatives to fossil fuel and economic development.

- Soon to be released report by La Capra Associates to Council on NC REPS highlights CHP potential

South Carolina

State Programs

- Biomass Energy Production Incentive
  - $0.01/kWh and $0.30/therm; $100 k max
- Biomass Energy Tax Credit
  - 25% of equipment costs for industrial biomass energy project; $650 k max
- ConserFund Loan Program
  - Loans for RE and EE projects up to $500 k
  - Public agencies, local govt, schools, non-profits
- Interconnection Guidelines
  - Up to 100kW for non-residential

South Carolina

Utility Programs

- Net Metering (Duke, Progress, Santee Cooper, SCE&G)
  - Biomass; Up to 100 kW for non-residential
  - Credited using TOU rates, extra fees

Other Initiatives

- Palmetto Clean Energy
  - Performance based incentive
  - Landfill gas and biomass eligible

South Carolina

Current Activity

- S.719 Renewable Energy and Energy Efficiency Portfolio Standard (similar to NC)
  - 20% by 2022, up to 25% from efficiency
  - CHP w/ renewable fuel= renewable, CHP w/non-renewable fuel= efficiency
  - Introduced in March, been in committee since

Tennessee

- Commercial Energy Efficiency Loan Program
  - Commercial, industrial, non-profit EE projects
  - $20 k - $5 M; 5% interest rate, 10 year payment term
- Sales and Use Tax Credit for Emerging Clean Energy Industry
  - Sales and Use Tax is reduced to 0.5% for clean energy technology manufacturers
  - Technologies that use biomass and landfill gas eligible

What are Ideal Policies to Support CHP/WHR in the Southeast?

- Given the current economic and energy market conditions, what policies would be most effective to encourage CHP/WHR investment in your state?
  - Which of these are most practical or likely?
  - What are some key existing policies that could be strengthened/clarified?