

# Review of La Capra Study

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# Analysis of RPS for NC aka “La Capra Study”

- Commissioned by NCUC in 2006 at direction of the Legislature
- Key Findings:
  - 5% RPS possible using indigenous resources
  - 10% RPS difficult using only indigenous resources
  - 10% RPS possible if EE comprises 25% AND Western NC wind and hydro developed
  - Practical potential for up to **3,400 MW** of new renewable supply resources

# 2006 Renewable Status in NC

- In 2006, North Carolina had over 2,000 MW of renewable generation (4%-5% of current energy needs)
  - 1,400 MW of utility owned hydro generation
  - 600 MW of non-utility owned renewable generation

# Renewable Potential

- Technical Potential: 12,909 MW
- Practical Potential: 3,373 MW
  - Biomass: 1,100 MW
  - On-shore Wind: 1,500 MW \*

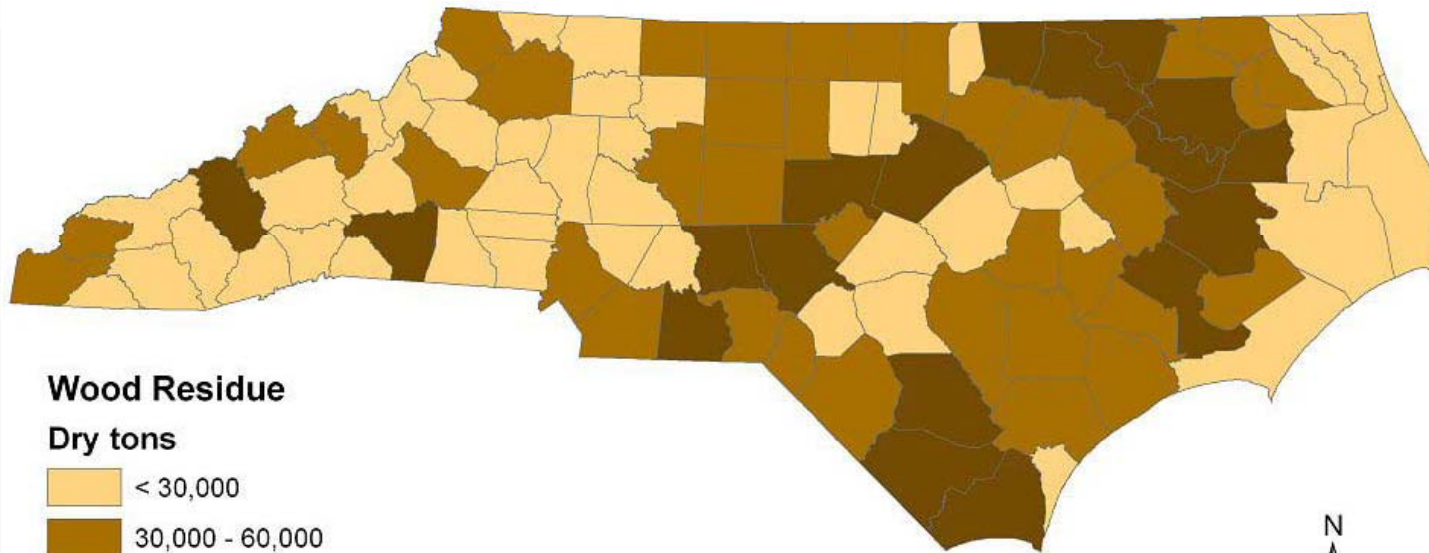
\* Includes western mountains

# What is Plant Biomass?

- Wood (Forest) Residue
- Urban Wood Waste
- Corn Stover and Wheat Straw
- Pulpwood
- Municipal Solid Waste
- Energy Crops (e.g., switchgrass)

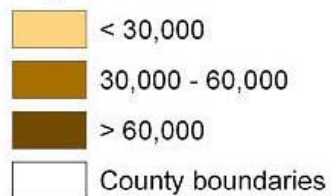
# Biomass Resource (Wood) Potential Map

Wood Residue by County, North Carolina



## Wood Residue

### Dry tons



0 40 80 160 Miles

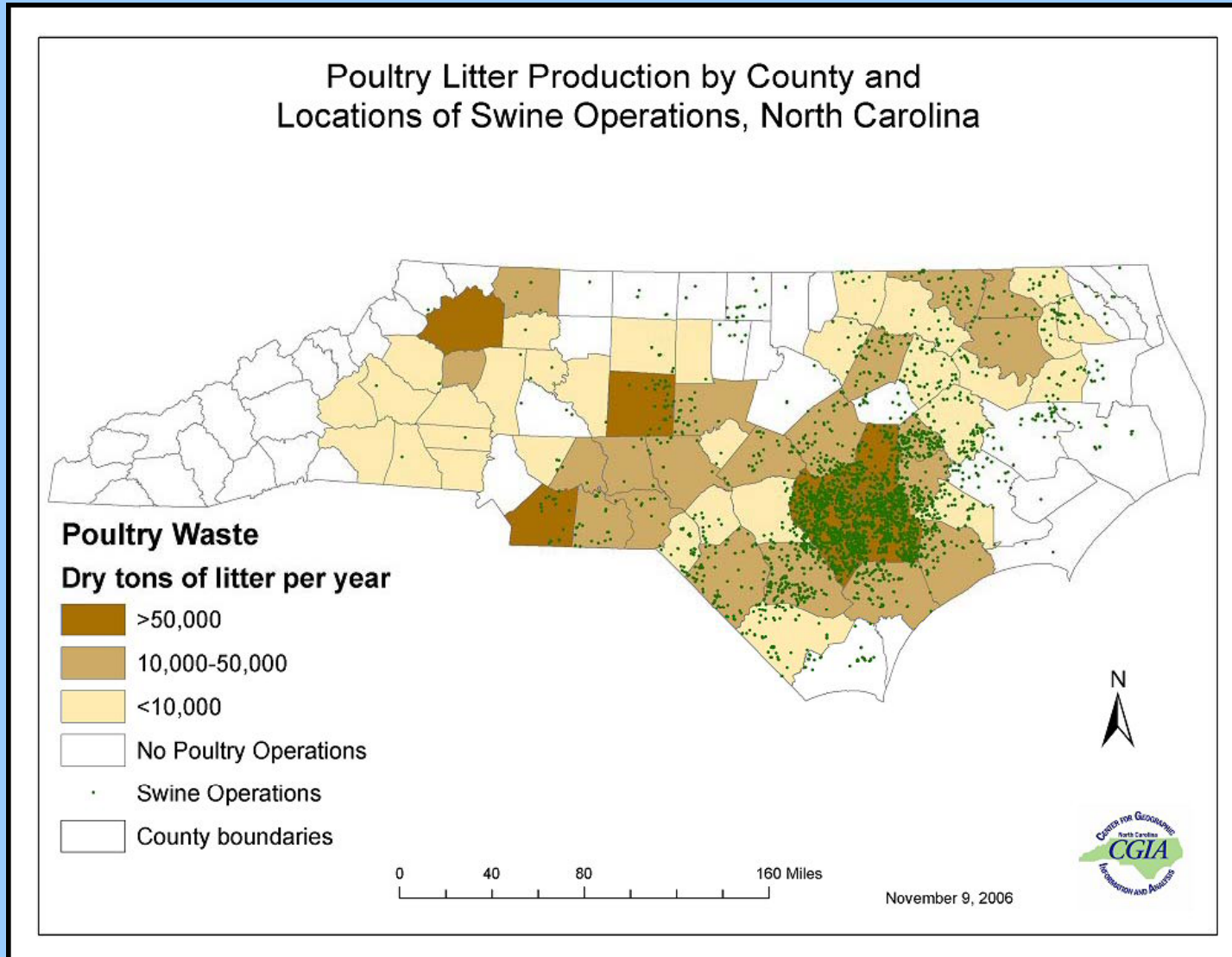
October 17, 2006



# What is Animal Biomass?

- Hog Waste (anaerobic digestion)
- Poultry Litter

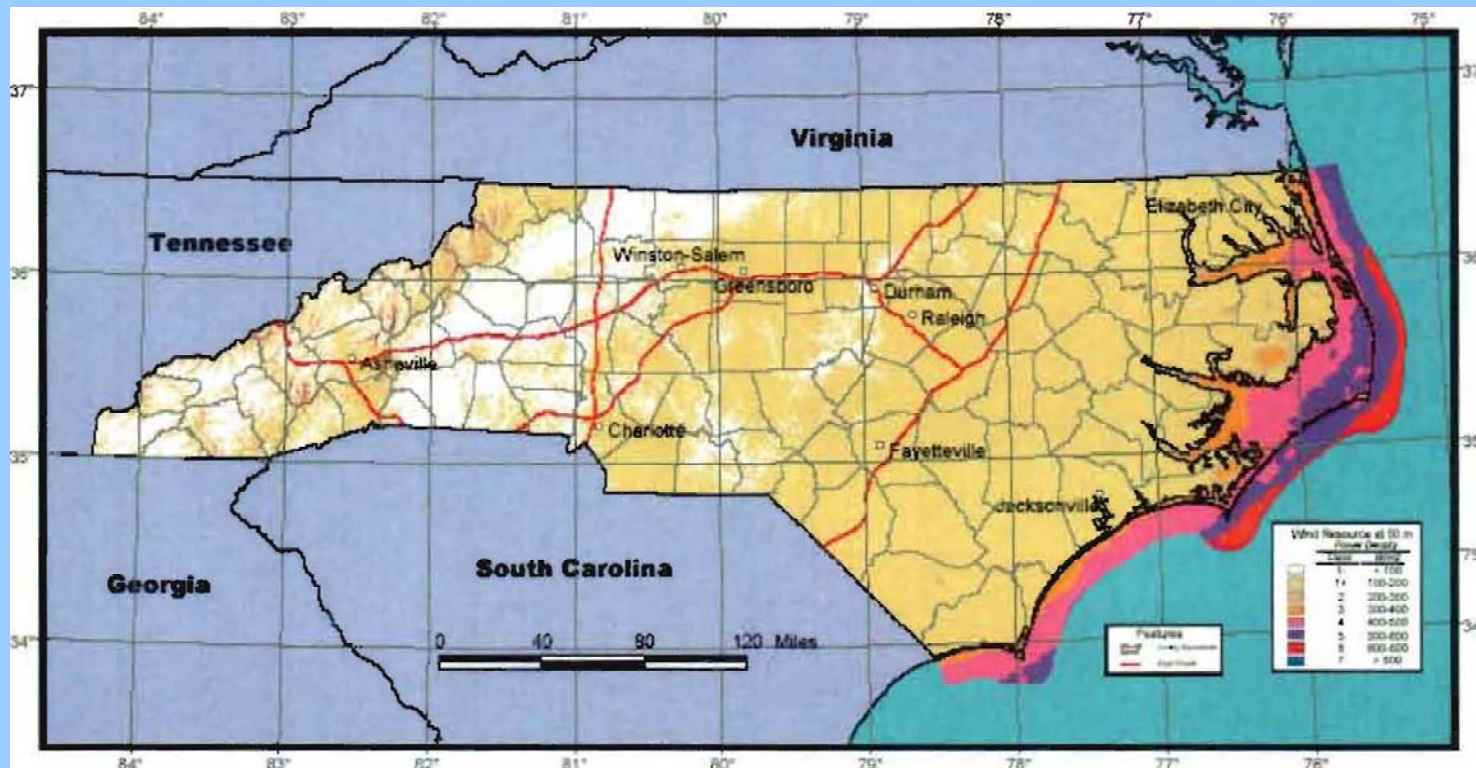
# Biomass Resource (Poultry and Swine) Potential Map



# Wind Resources

- Eastern Wind
  - On-shore
  - Primarily Class 3 sites
- Western Wind
  - Mountain Ridges
  - Class 3-5 sites
- Off-Shore Wind
  - Unknown at the time of La Capra Study
  - UNC Study (Ocean and Sounds)

# Wind Resource Potential Map



# Solar Resources

- Electricity Generation
  - PV
  - Thermal Electric
- Thermal Energy Conversion
  - Solar Thermal

# Key Issues for Renewables Development in NC

- 2006 Avoided Cost levels too low to support new renewables (higher now)
- IRP process looks at busbar costs without considering externality costs
- Mountain Ridge Protection Act of 1983 (“Ridge Law”)
- Major Transmission Upgrades needed
- Interconnection uncertainty

# Rate Impacts

- 5% RPS (renewables only)
  - \$0.20 to \$3.10 increase over 10 years
- 5% RPS (renewables plus EE [25% of total])
  - \$0.21 to (\$0.31) over 10 years
- 10% RPS (renewables only)
  - N/A
- 10% RPS (renewables plus EE [25% of total])
  - \$0.45 to \$0.38 over 10 years

# Non-Energy Related Benefits

- State Economic Development Impact
  - Changes in Electric Rates
  - Renewables Jobs Creation
- Environmental Impact
  - Air Quality
  - Greenhouse Gases
  - Water Usage
  - Land Usage
  - Fuel Extraction
  - Waste Disposal

# Non-Energy Related Benefits

## (cont'd)

- Portfolio Diversification Impacts
  - Fuel Price Fluctuations
    - Coal, Natural Gas, Uranium
    - Indigenous Energy Independence
  - Future Environmental Regulations
    - Carbon
    - Mercury
    - Coal Ash

# Energy Efficiency

- EE at \$0.05 per kWh and below considered cost-effective
- Achievable cost-effective potential of 14% reduction of forecast 2017 sales
- EE is capable of meeting 25% of either a 5% or 10% RPS
- Education, training, and 50% incentive levels are needed to achieve this level of EE

# Questions?

