

# Warwickshire **Climate Change Strategy**

'Thinking global, acting local'

Dr. Jacky Lawrence

Immediate Opportunities for Biomass in Warwickshire  
Thursday 15<sup>th</sup> November



# Warwickshire **Climate Change Strategy**

## The Strategy

- 5 Key Areas
  - Energy
  - Transport
  - Resource Efficiency
  - Adaptation
  - Communication & Education

Warwickshire

### **Climate Change Strategy**

'Thinking global, acting local'

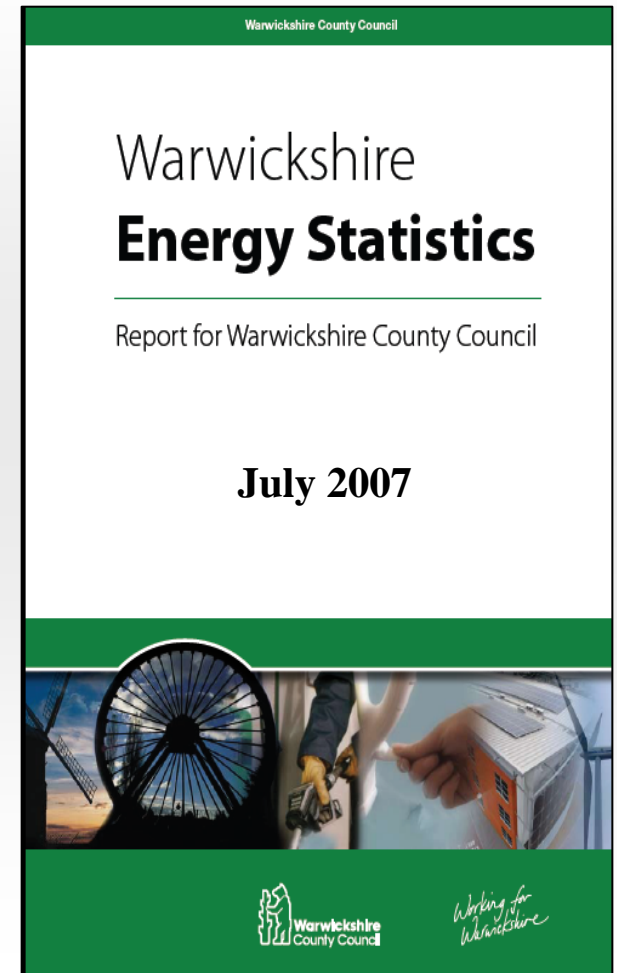
**July 2006**



# Warwickshire Climate Change Strategy

## Warwickshire Energy Statistics

- 2005 Final energy consumption was 20.43 GWh - *25% is domestic, 31% industrial & commercial, and 45% transport.*
- We currently only have around 2MW of Combined Heat and Power (CHP) in the county- *we would need 90MW to fulfil our share of the national target.*



# Warwickshire **Climate Change Strategy**

## The Potential for Biomass



- 2007 installed renewables capacity is 20.7 MW
  - virtually all landfill gas - *3 MW sewage gas*
  - and *0.1 MW PV*.
- Output in 2005 81 GWhe, 2006 76 GWhe
- 2010 renewable electricity target - 136 GWhe of electricity consumed to come from renewable sources.



# Warwickshire Climate Change Strategy

## The Potential for Biomass

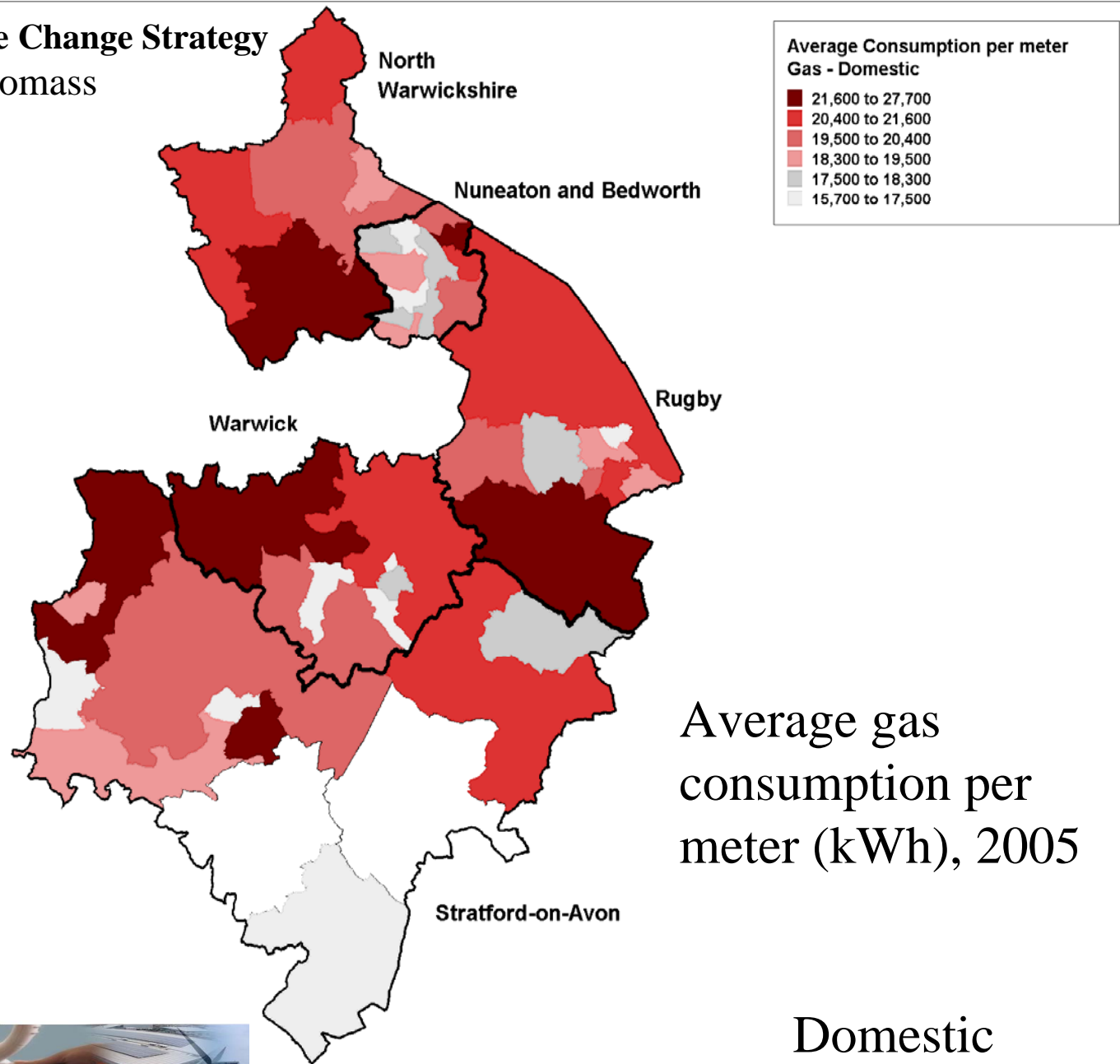


What would X GWhe/yr would mean if from		<b>5%</b>
pyrolysis - with engine	GWhe	<b>136.4</b>
Total biomass resources	odt/y	<b>68,371</b>
Yield in		
Land area required	ha	<b>5,698</b>
Price of Short Rotation Coppice per tonne	35.00 £/tonne	
Total cost of annual biomass resources	£/year	<b>£2,392,982</b>
Land area per MWe required	ha/MWe	<b>311</b>
Average size of farm in hectares		
% of farm used for growing biomass crops		
Therefore number of farmers needed		<b>703</b>
Calorific value	19 GJ/odt	
Total calorific value	1,299,048 GJ/odt	
Generation efficiency	38%	
Gross GWhe/y	136.4 GWhe/y	
Availability	85%	
MWe installed capacity		<b>18.32</b>
% labour used in pre-treatment	%	<b>0%</b>
Total labour	2.1 MWe	
Total labour		<b>38</b>
10th plant costs per MWe		
Total plant costs per MWe		
Based on estimated		<b>2005 prices</b>
Capital investment per job		<b>£499,042</b>



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## The Potential for Biomass



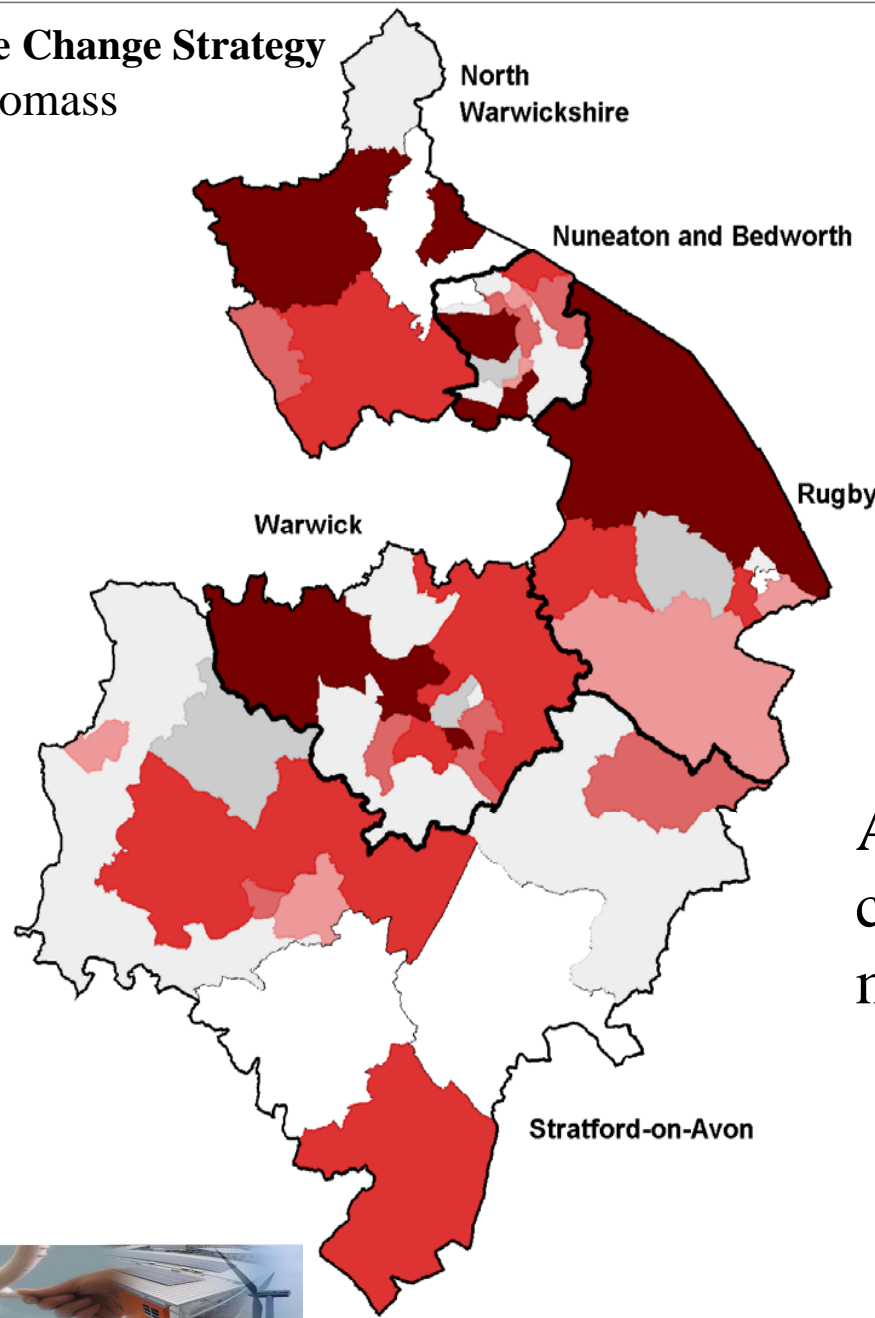
Average gas consumption per meter (kWh), 2005

Domestic



# Warwickshire Climate Change Strategy

## The Potential for Biomass



Average Consumption per meter  
Gas - Industrial/ Commercial

- 550,000 to 4,710,000
- 380,000 to 550,000
- 290,000 to 380,000
- 230,000 to 290,000
- 200,000 to 230,000
- 110,000 to 200,000

Average gas  
consumption per  
meter (kWh), 2005

Industrial /  
Commercial



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THANK YOU FOR LISTENING

[www.warwickshire.gov.uk/climatechangepartnership](http://www.warwickshire.gov.uk/climatechangepartnership)

