



Town of
East Gwillimbury



Community Energy Plan

GTA Clean Air Council

February 26, 2010





Town of
East Gwillimbury



Presentation Overview

- Overview of the Town of East Gwillimbury
- Overview of EG's Community Energy Plan Process
 - Why establish a Community Energy Plan?
- Summary of Community Energy Plan
 - Guiding Vision & Recommendations
- Lessons Learned
- Next Steps & Implementation

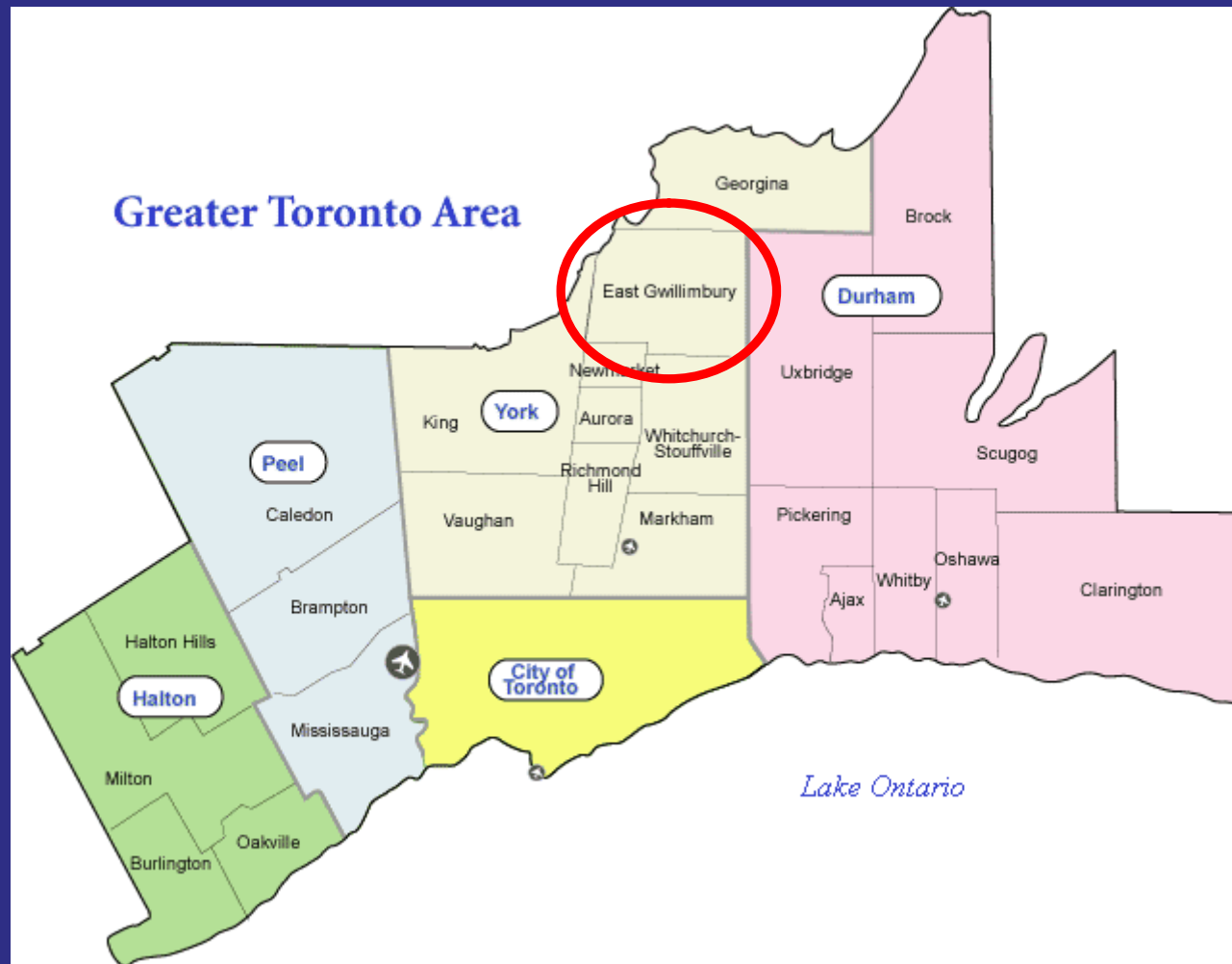


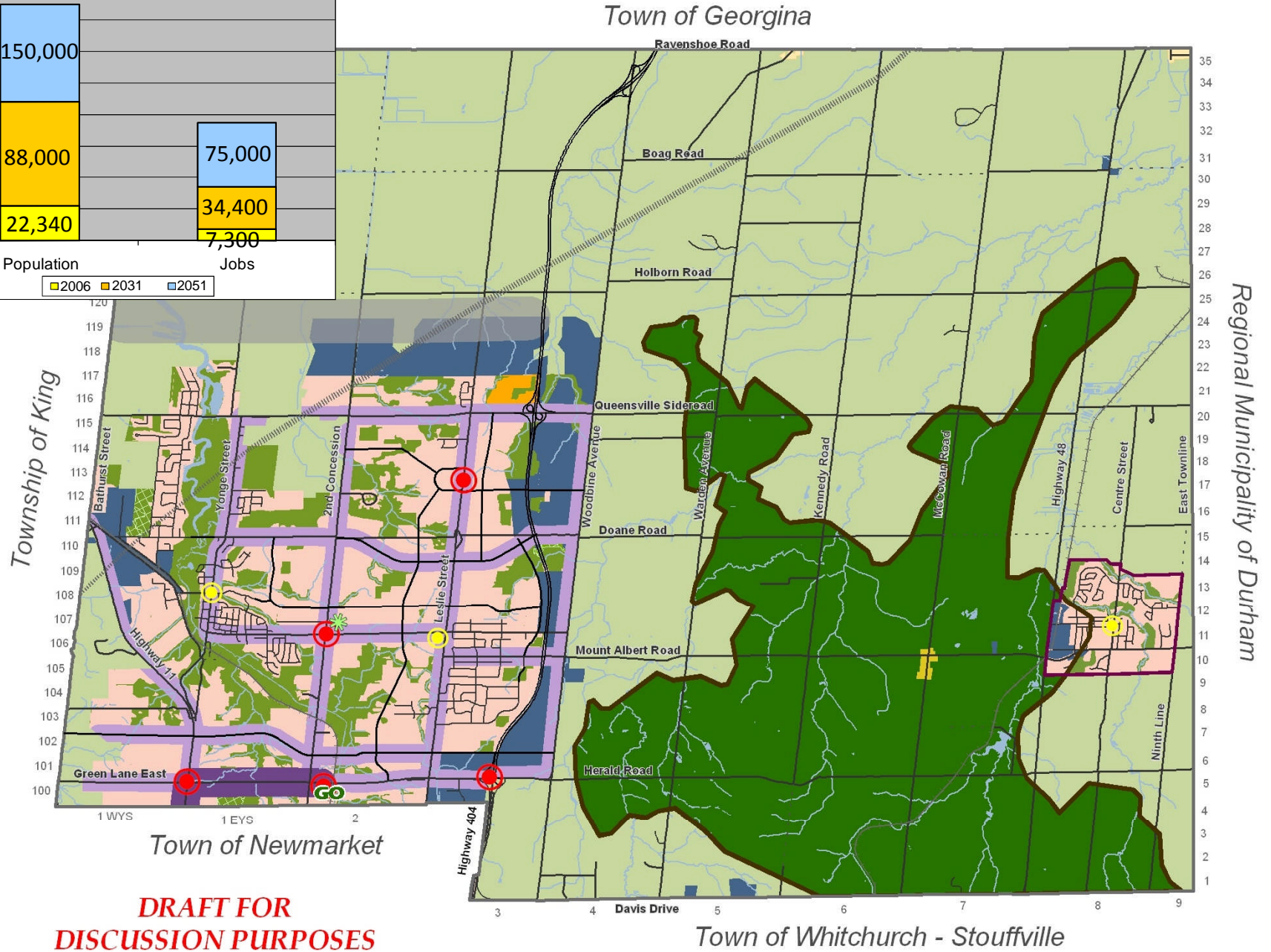
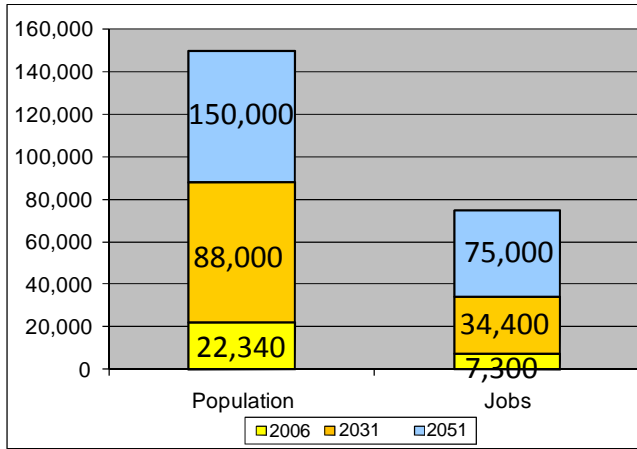


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Overview of EG







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Overview of CEP Process





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CEP Background



- Sustainable Community Forum (2007)
- CEP supported by FCM & project initiated (Fall 2008)
- Consultation/Workshops (08-09)
 - Council
 - Community
 - Developers
- CEP Adopted by Council – December 1, 2009



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CEP Team Structure



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Garforth International llc
Energy Productivity Solutions

TERRA SOL



Global Perspective – Local Expertise



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Why Undertake a CEP?

- Climate change and associated environmental concerns
- Steady rise in energy costs
- Growing uncertainty of affordable energy supply
 - EG wants to ensure clean, reliable, affordable and flexible energy services
- Recent legislation – Green Energy Act, 2006 Building Code
- Town's commitment to green leadership
 - Energy Star, LEED
 - Member of the Partners for Climate Protection
- Planning for significant growth in the Town
- Economic advantages





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Overview of CEP



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Targets

- **Ensure energy services in East Gwillimbury will be reliable and lower cost than in comparable towns in Canada**
- **By 2031 the greenhouse gas caused by the Town will be at least 50% less than business-as-usual and on track to be at least 70% less by 2051**





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Energy Related Baseline Energy Consumption

Sector	Energy GWh _e /yr	Energy %	Energy MWh _e /cap	GHG mt/cap	GHG %
Residential	560	47%	25.6	2.6	32%
Commercial	180	15%	9.2	0.8	10%
Industrial	90	8%	4.1	0.4	5%
Transport	370	31%	16.9	4.3	53%
Total	1,200	100%	54.8	8.1*	100%

- Included energy directly related to the Town
 - Buildings and residents vehicle use including commuting
 - Commercial vehicles related to Town
- Excluded energy indirectly related to the Town
 - Energy related to commuters workplace
 - Long-distance freight, ships, airplanes, national industry





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Recommendations Summary: *Integrated Solution - Not a Buffet*

- Efficient homes, buildings, industry
- Efficient neighbourhoods
- Efficient transportation
- Efficient distribution - District Energy
- Clean and renewable energy sources
- Passive (near-zero energy) homes





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Energy Efficient Buildings – New Construction

- **Reduce residential energy demand in half compared to business as usual**
- **Reduce commercial, institutional, & industrial energy demand by one third compared to business-as-usual**

	Base case	Recommended Efficient Case
Residential		
New Construction	Energy Star	Increase Efficiency 1.0% per year from 2010
Renovation	At least 15% efficiency gain from 2010	At least 25% efficiency gain from 2010 Increase efficiency 1% per year from 2011
Commercial		
New Construction	LEED (Canadian)	Increase efficiency 0.75% per year from 2010
Renovation	At least 15% efficiency gain from 2010	At least 25% efficiency gain from 2010
Industrial		
Process energy	10% higher than Canadian average	20% higher than Canadian average Encourage continuous improvement



Committed to Continuous Improvement



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Energy Efficient Buildings – Guarantee Efficiency

- **Adopt an energy performance labelling process for buildings as a voluntary initiative to gain at least 5% incremental efficiency**



	Base case	Efficient Case
Residential/Commercial		
New Construction	Voluntary No recourse	Voluntary – Label available when sold Builder guarantees performance
Existing Buildings	None	Voluntary - Label available when sold or rented Seller/Landlord guarantees performance

Committed to Transparency

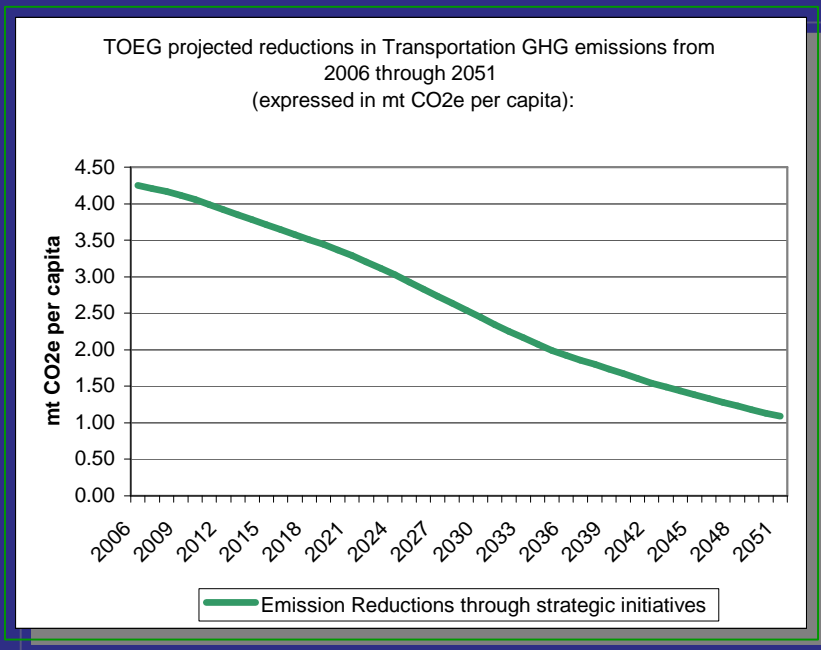


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Efficient Transportation

- ***Increase overall transportation efficiency to reduce transport greenhouse gas emissions per capita by 75% compared to emissions today***



- ***Town strategies***
 - ***Transit links***
 - ***Compact neighbourhoods***
 - ***Economic Development***
- ***Market trends***
 - ***Vehicle weight reduction***
 - ***Advanced materials***
 - ***Consumer choice for smaller vehicles***
 - ***Drive technology***
 - ***Clean diesels, EVs, Hybrids....***



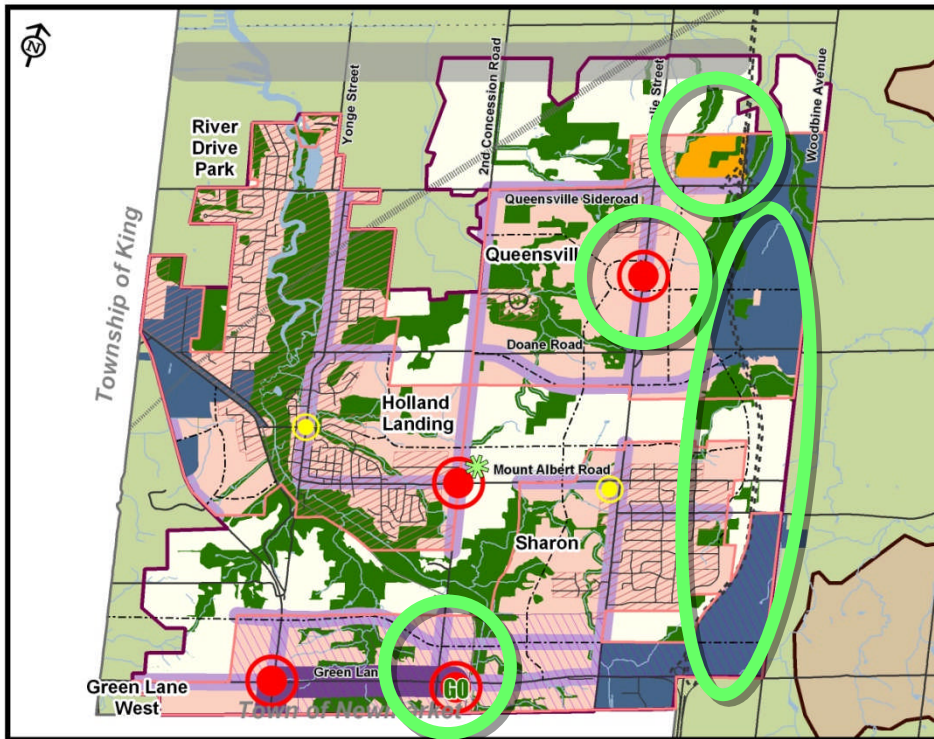


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Efficient Neighbourhoods & Compact Urban Centres

- **Create residential, commercial, and transport energy efficiencies through compact urban forms**



Reduced transport energy

- *Live-Work-Play cuts journeys*
- *Walkable neighbourhoods*
- *Bike-friendly*
- *Small vehicle convenient*
- *Transit friendly*

Efficient Homes and Buildings

Shared Energy Systems

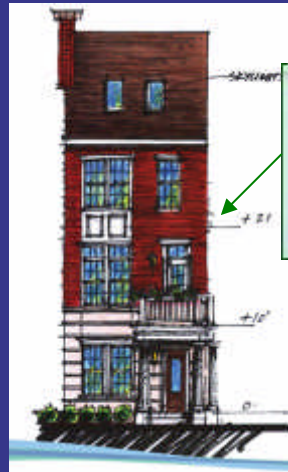
- *Reduced total investments*
- *Increased efficiency*
- *Productive use of waste*



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Efficient Distribution - District Energy Typical Elements of Modern System



Sub-Station



Heat Meter



Service Connection



Insulated Pipes



**Central gas
And
Biomass Boilers**



**Cogeneration
(Combined Heat
& Power)**

- Reduced construction costs
- Reduced heating costs
- Reliable, proven technology
- Flexible choice of heat sources
- Attractive financial returns



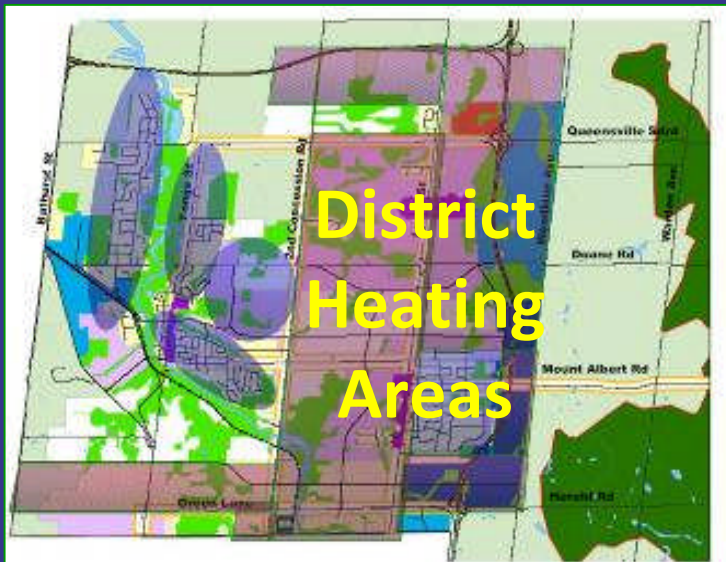


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Efficient Distribution - District Energy

- ***Create a professionally operated district energy system serving the majority of the Town with high quality services from sources that optimize cost, availability, and minimize environmental impact long into the future***



- Establish Energy Services Company
 - Supply neighbourhood District Heating
 - Selectively add District Cooling
- Attractive returns
 - Builder/developer
 - Occupant
 - Energy Services Company
- Major greenhouse gas reductions

Benchmark Cities are extending District Energy



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Efficient Distribution – District Energy *Tailored Services for Employment Corridor*

- ***Enhance East Gwillimbury's attractiveness for industrial and commercial investors by offering world-class tailored energy services within the Employment Corridor***



Austin, Texas



Gersthofen, Bavaria

- Increase jobs in the Queensville Centre and Hwy 404 Employment Corridor
- Offer range of utility services
 - *District heating*
 - *District cooling*
 - *Process steam*
 - *Waste heat recovery*
 - *Compressed air...*
- Tailor services to investors needs
- Multiple clean and renewable energy sources

Competitive Advantage - Attracts Employment



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Clean and Renewable Energy

- ***Within fifteen years, at least a third of East Gwillimbury's total energy requirement will be competitively sourced from local clean and renewable energy resources***
 - **District Energy allows multiple renewable heat sources**
 - **Bio-Mass for District Heating**
 - **15 to 20 MW (thermal) total by 2031**
 - **Combined Heat and Power**
 - **100 MW electricity by 2031**
 - **100 MW heat by 2031**
 - **Solar Photovoltaic**
 - **60 MW (600,000 to 800,000 square meters)**
 - **20% of electricity needs with summer peak reduction**
 - **Wind Energy**
 - **Marginal wind quality and economics**
 - **6 MW in University and Employment Corridor**

Flexible Supply System

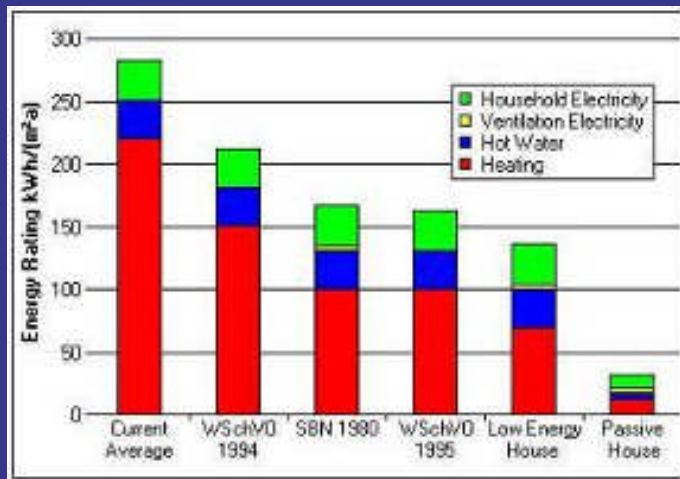


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Passive Homes (Near-Zero Energy)

- **Enhance East Gwillimbury's position as an energy efficiency leader by supporting passive home construction in areas not served by district heating**



- **Passive Homes**
 - *Very low heating and cooling energy*
 - *Germany has formal construction codes*
 - *Small demos have been done in US/Canada*
- **Living Laboratory / Demonstration**
 - *University*
 - *Green Products Manufacturers*
- **Marginal to unattractive economics at present**
- **Growing interest from specialist developers**

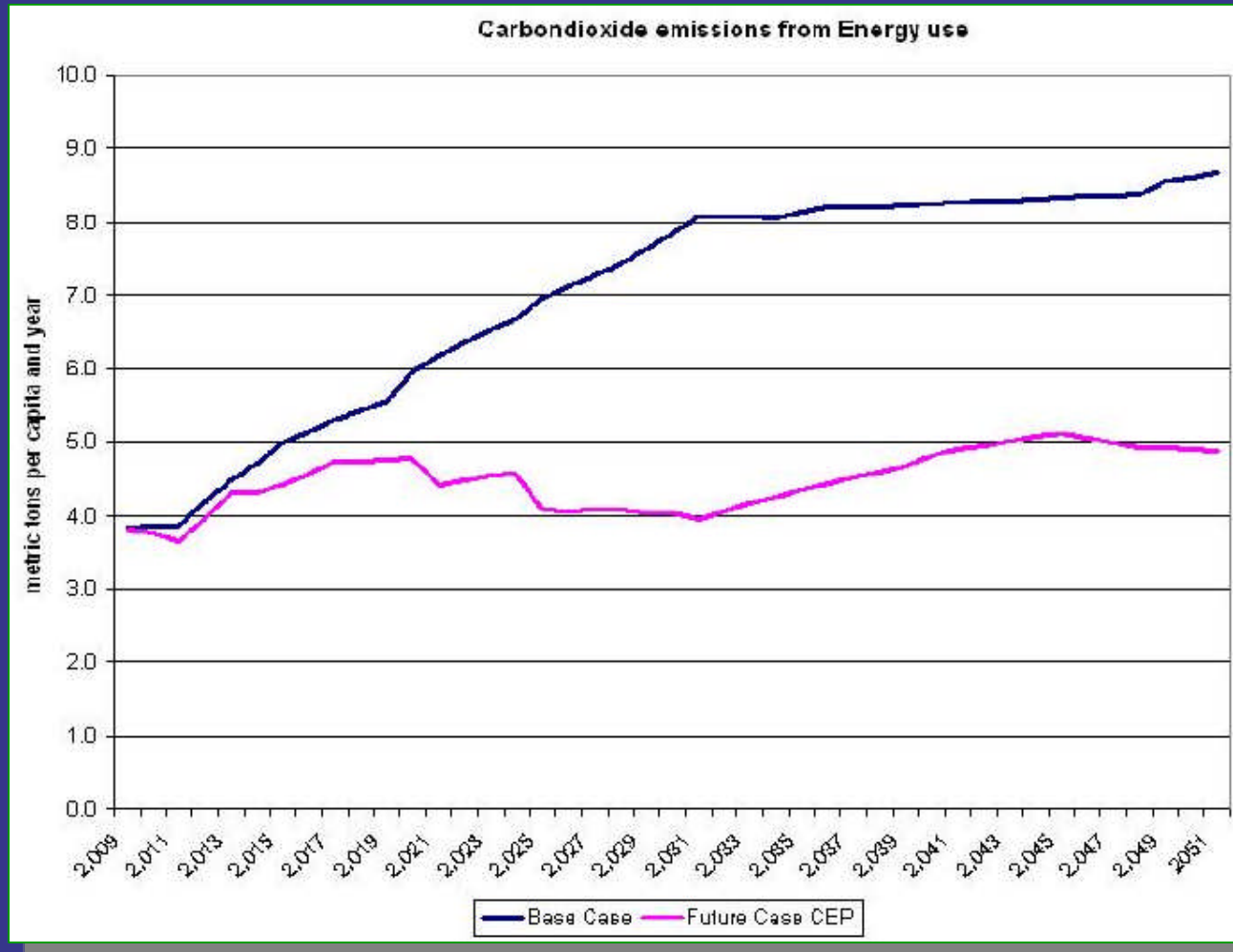
Visibly Maintain Leadership



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Results - 2051 GHG/Capita *Homes, Buildings and Industrial Only*



42% Less than Business-as-Usual

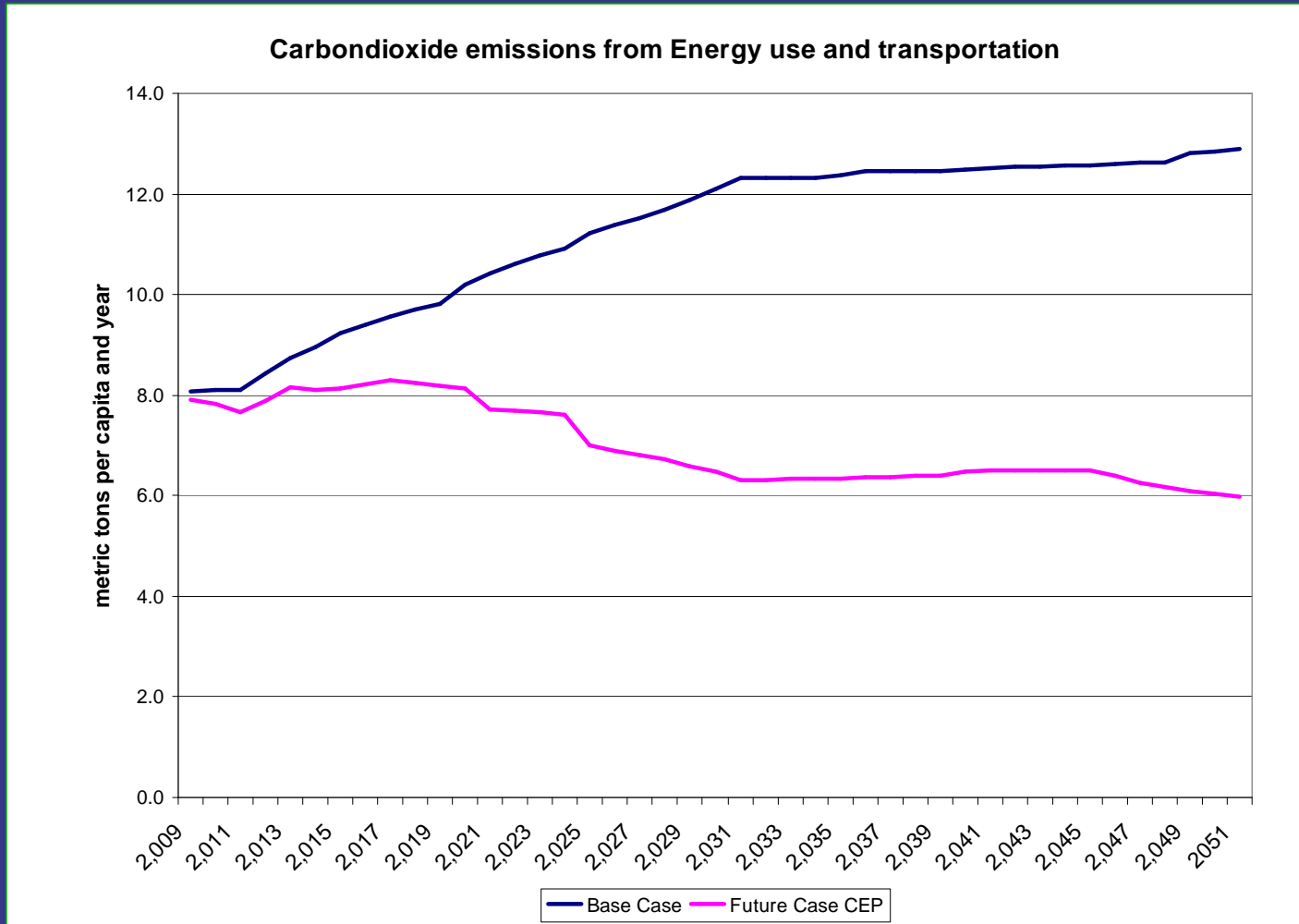


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Results - 2051 GHG/Capita

Homes, Buildings, Industrial & Transport



54% Less than Business-as-Usual





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Lessons Learned

- Important link to growth management and other background studies as part of the Official Plan Review
- Community Energy Planning requires education and training
- Implementation difficult to integrate into BAU
 - Work closely with the development industry
- Successful implementation requires commitment and monitoring





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Implementation & Next Steps

- Policies being incorporated into Town's New Consolidated Official Plan
- Developing a Sustainable Development Evaluation System
- District energy feasibility study being undertaken
- Exploring opportunities for carbon credits





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Thank You!

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