Energy Use and GHG Emissions Forecasting

Baseline Scenario

- Applied energy use estimates with current housing stock
  - Final Report: Toronto GDS Cost-Benefit Study.
    - Kesic, T. and A. Miller. 2008.
  - Getting to Carbon Neutral
    - SIG. 2010.
  - Carbon Neutral City Planner
    - SIG and TRCA. 2011.
  - Vaughan Tomorrow
    - Hemson Consulting. 2010.

- Residential uses = ~10.3m GJ/yr (519,000 t·CO_2e/yr)
- Commercial* uses = ~18.8m GJ/yr (940,000 t·CO_2e/yr)

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*Commercial uses = all non-residential uses

Scenario Generator

RESIDENTIAL

Single Detached, Single Attached, Row		Apartments	
Retrofit		Retrofit	
Percent Improvement of Retrofits:	0%	Percent Improvement of Retrofits:	0%
Proportion of Existing Units:	0%	Proportion of Existing Units:	0%
New Build		New Build	
Base Level Improvement:	31%	Base Level Improvement:	31%
Proportion of New Build:	100%	Proportion of New Build:	100%
Higher Level Improvement (Low-Rise):	0%	Higher Level Improvement:	0%
Proportion of New Build:	0%	Proportion of New Build:	0%

COMMERCIAL

Retrofit	
Percent Improvement of Retrofits:	0%
Proportion of Baseline:	0%
New Build	
Base Level Improvement:	25%
Proportion of New Build:	100%
Higher Level Improvement:	0%
Proportion of New Build:	0%

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Energy Use Forecasting

- 2031 Population: 418,800
- Minimum 31% improvement over Model National Energy Code for all new residential
  - Variables: retrofitting, higher achievement levels, district energy, scale
- Energy saving estimates:
  - Minimum targets = savings of approx. 5.5million GJ of energy/yr (277,882 t·CO_2e/yr) compared to business as usual projections
    - Represents largest decrease in energy use, but still far from net zero or carbon neutral

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Next Steps

- Refine figures
  - Retrofit, district energy, industrial uses, energy savings from other design elements (landscaping, green roofs, etc.)
- Critical point/"sweet spot"
  - How far can current technology take us?
- Review Team: utility providers, SIG, TRCA, internal staff
- Report – placing findings into the broader context (Carbon Neutral City Planner: transportation, water/wastewater, carbon sequestration, etc.)

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