APPENDIX A

Clarington Energy Business Park Heating and Cooling Loads

Durham/York Thermal Treatment Facility
Energy and Associated Impacts Report
Appendix A - Clarington Energy Business Park Heating and Cooling Loads

Clarington Energy Business Park Peak Thermal Loads

Land Development Criteria	Surface Area		PEAK (1) Thermal Load (MWth) (2,3)	
	m^2	*sf*	***Cooling***	***Heating***
prestige employment	1,275,000	13,716,960	62.5	74.0
light industrial	363,000	3,905,299	17.8	21.1
Total	*1,638,000*	*17,622,259*	*80.3*	*95.0*

Clarington Energy Business Park Annual Thermal Loads and Energy Displacement

Month	Degree Days (5)	Daily Average (5)	AVERAGE Thermal Load (6)	
	(<18C)	*degrees C*	***Cooling*** *kWth*	***Heating*** *kWth*
Jan	752.9	-6.3	-	64,148
Feb	662.1	-5.4	-	53,695
Mar	571.6	-0.4	-	37,956
Apr	353.3	6.3	-	22,404
May	171.8	12.9	10,246	11,467
Jun	49.4	17.8	31,592	2,928
Jul	8.9	20.8	44,827	1,970
Aug	17.8	19.9	40,558	1,970
Sep	102.5	15.3	22,200	6,659
Oct	282.6	8.9	-	17,620
Nov	445.5	3.2	-	28,821
Dec	647.4	-2.9	-	46,147
year	*4065.7*	*7.5*		
Annual Total Thermal Load (MWh)			119,565	224,828
Displaced Utilities			electricity	natural gas
Displaced Consumption (m^3/yr)			-	26,987,432
Displaced Consumption (MWhr/yr)			19,927	-
Displaced Equipment			electric chillers	boilers
Efficiency			-	80%
COP			6	-

NOTES

1 Weather Conditions

ASHRAE Toronto	degrees C
99% cooling condition	35
99% heating condition	-20

2

Building	Est'd mix (4)	Cooling	Heating
	%	*W/m^2 at 35C*	*W/m^2 at -20C*
Poor insulation	0%	37	80
Medium Insulation	0%	43	69
Good Insulation	100%	49	58
	composite	*49.0*	*58.0*
	equivalent peak load	*1489.0*	*2163.0*

3 Industrial process loads are not included, but presumed to be minimal.
Reference to Data Processing Centres is important for consideration of significant cooling loads.

4 Building mix selection is estimated.

5 Toronto Pearson Int'l Airport Norms (Environment Canada Website, April 20, 2009) for 1971 to 2000.

6 Retscreen Load and Network Design.