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To: File
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Project No.: 5123
Subject: Facility Size

The Regions of Durham and York are in the process of determining the potential size required for an EFW. This process involves analyzing the seasonal variation and determining whether the facility should be sized for the minimum or maximum capacity requirements.

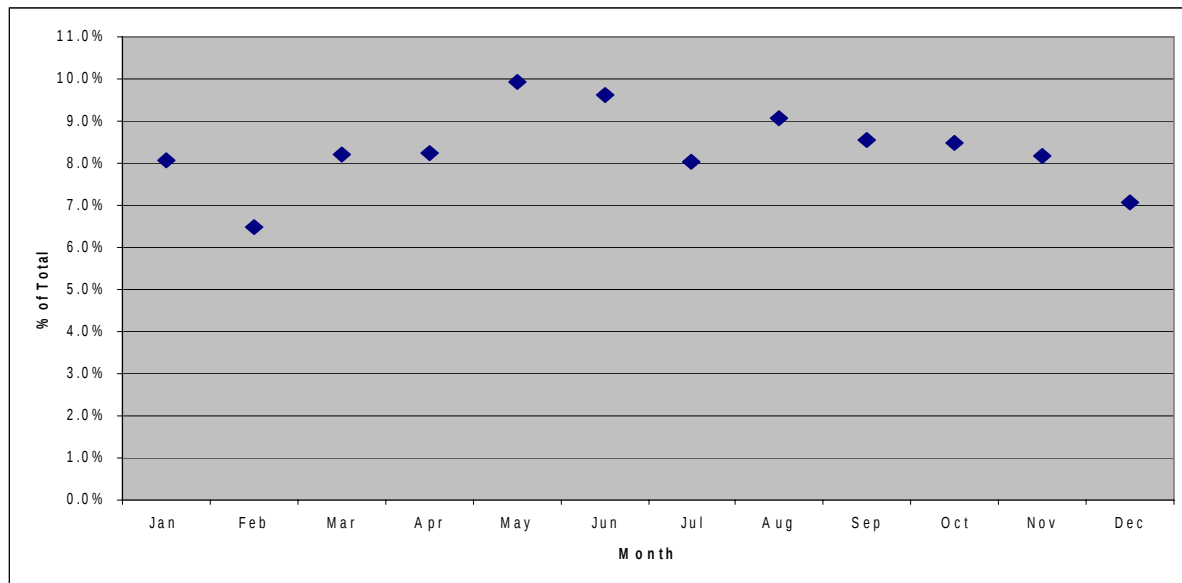
Regional staff provided monthly waste quantity data for all material types in 2005 and 2006. The data varied for both Regions because the Source Separated Organics (SSO) programs were introduced in both years.

In July of 2005, York Region introduced the SSO program in Markham. This resulted in a significant decrease in the amount of residual waste collected. Because of this change, the 2006 data was used in the analysis.

Durham Region completed the Region-wide implementation of the food waste collection program with implementation in Pickering, Ajax, Oshawa and Whitby in July of 2006. The 2006 Durham quantities were used in the analysis with the food waste added back into the residual waste stream to obtain consistent information on the seasonal variation.

The first step in the modelling of residual waste quantities involves analyzing and plotting the combined monthly waste data for both Durham and York Regions to see the seasonal variation of residual waste disposed throughout the year. Figure 1 illustrates the amount of residual waste disposed per month as a percentage of the annual total.

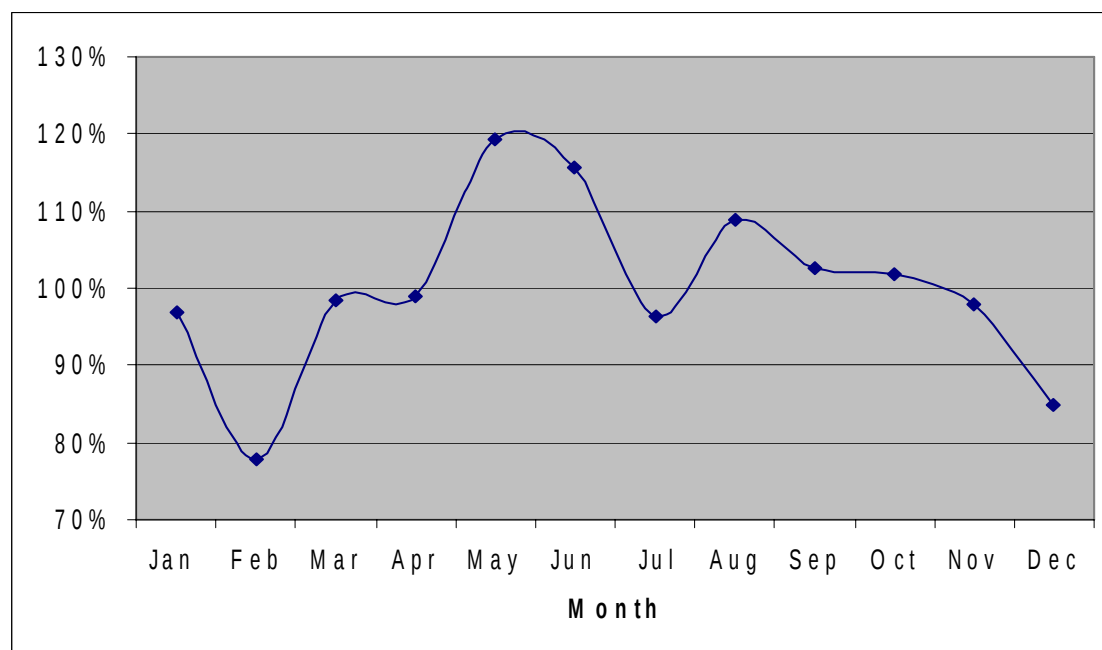
Figure 1 Monthly Variation of Residual Waste Disposed in 2006



As shown above, more waste is disposed of in May and June and less waste is disposed of in February and December.

In 2006, the average amount of residual waste disposed per month was approximately 28,600 tonnes for Durham and York combined. The actual amount of residual waste sent for disposal each month was divided by the monthly average (28,600 tonnes) to express the seasonal difference in waste received on a percentage basis as shown in Figure 2 below.

Figure 2 Seasonal Difference in Residual Waste Disposed in 2006



As shown above, the differences in seasonal residual waste disposed vary at a minimum of 78% of the average monthly amount in February, to a maximum of 119% of the average amount in May.

Figures 3 and 4 illustrate the implications, on a monthly basis, of a facility sized for the maximum and minimum monthly capacity. Designing the facility for the maximum monthly capacity (i.e., at 119%) would require additional waste to be imported (Figure 3) to the facility. If the facility were designed for the minimum monthly capacity (i.e., at 78%), waste would have to be landfilled (Figure 4).

Figure 3 Maximum Monthly Capacity

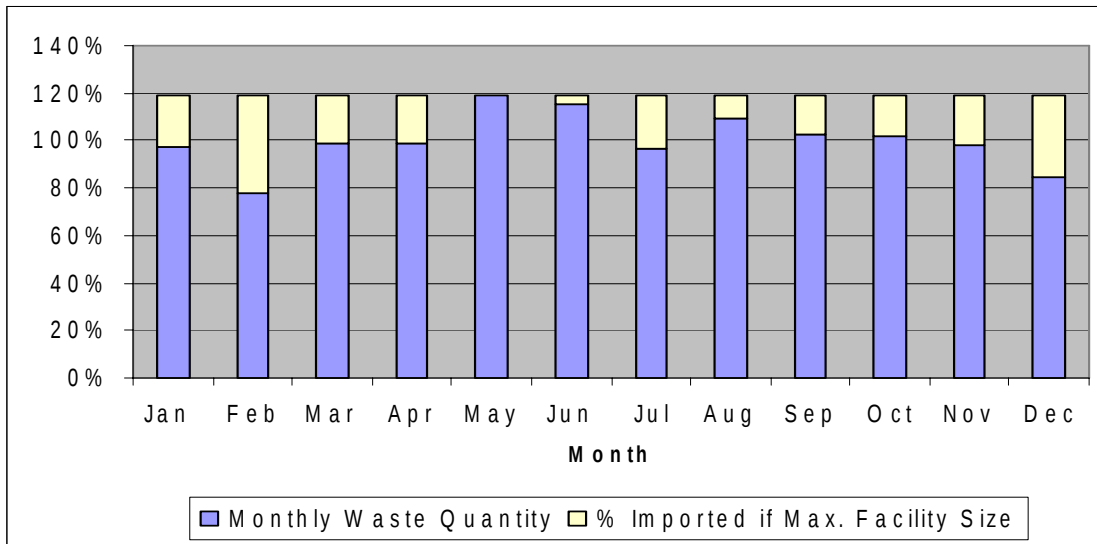
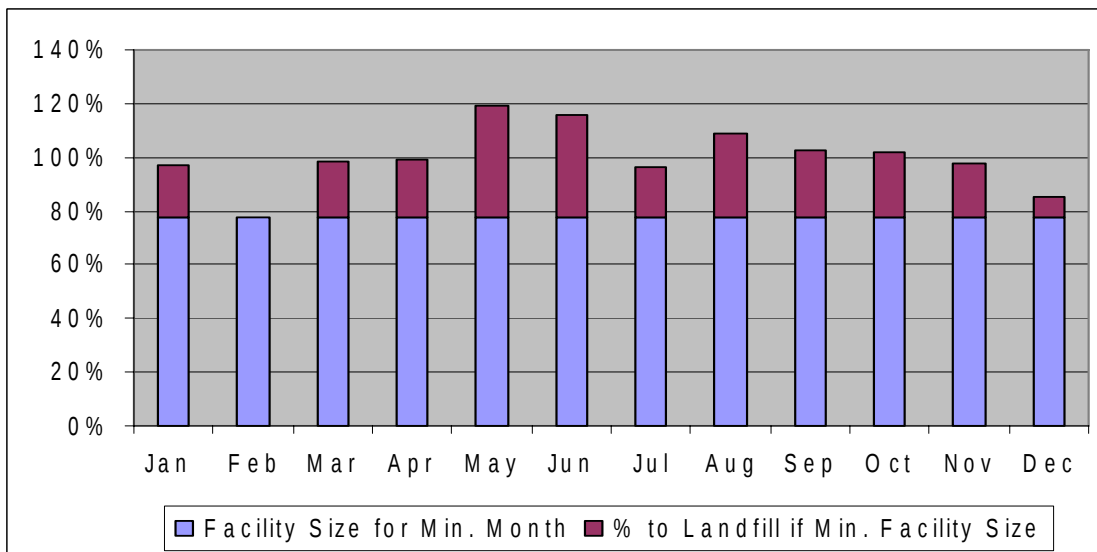


Figure 4 Minimum Monthly Capacity



The next step determined the waste quantities for the maximum and minimum facility capacities from 2011 to 2030. The waste projections were previously calculated as part of the “*Additional At-Source Diversion and Residual Quantities to be Managed*” report completed as part of the Evaluation of “Alternatives To” in May 2006.

Two sets of analysis were completed. The first assumes a constant 60% diversion from 2011 to 2030 and the second assumes 55% diversion at 2011 incrementally rising to 75% by 2030. Both sets of data assume York Region sends 100,000 tonnes per year of residual waste to Dongara Corporation for processing into alternative fuel pellets.

The numbers projected annually from 2011 to 2030 include:

- the total estimated annual residual waste from Durham and York;
- the maximum annual facility capacity, in any one year, based on a facility sized for 119% of the estimated average monthly quantity;
- the additional quantity of imported/IC&I waste required for a facility sized for the maximum monthly quantity;
- the minimum annual facility capacity, in any one year, based on a facility sized for 78% of the estimated average monthly quantity;
- the annual quantity of waste to be sent to landfill for a facility sized for the minimum monthly quantity.

Figures 5 and 6 present the estimated quantities of residual waste, for the above-mentioned scenarios, assuming the 60%, and 55% to 75% at-source diversion scenarios.

Figure 5 Tonnes of Residual Waste to be Managed at 60% At-Source Diversion

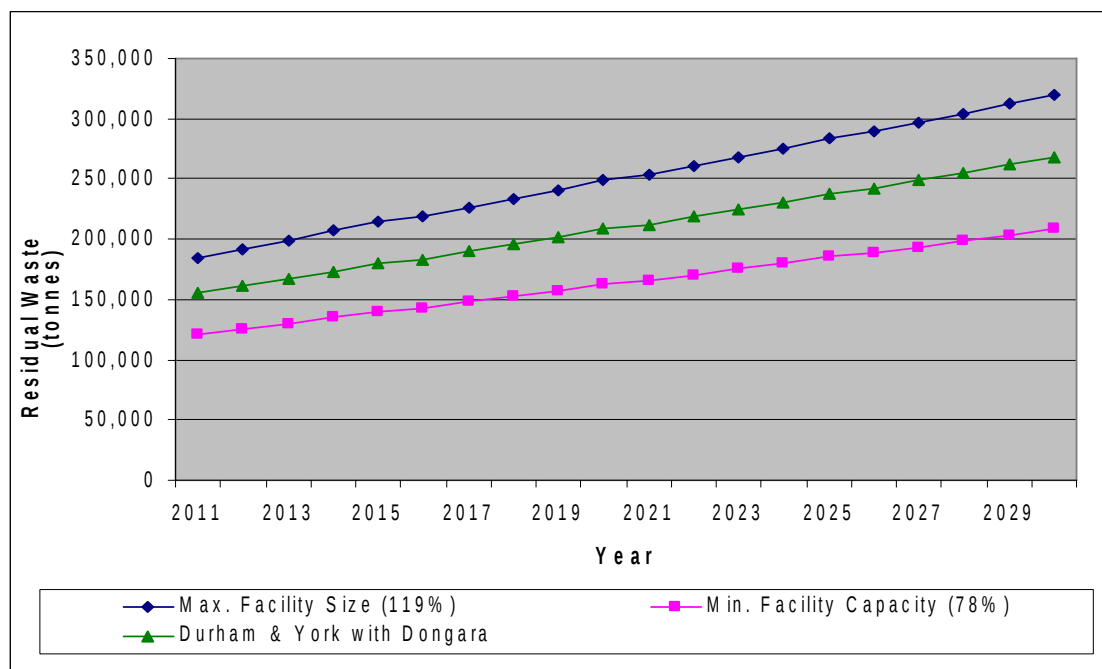
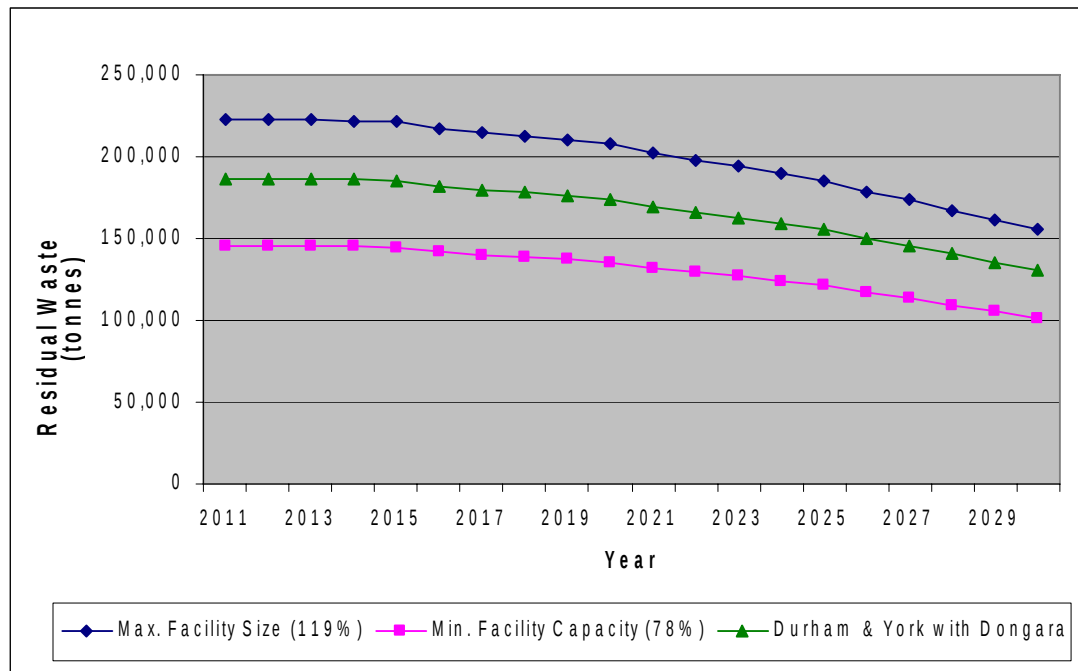


Figure 6 Tonnes of Residual Waste to be Managed at 55%-75% At-Source Diversion



For Figures 5 and 6, for the first year, the difference between the top two data points is the quantity of imported waste required, if the facility was sized for the maximum monthly quantity (i.e., 119% of average monthly quantity). The difference between the lower two points represent the amount of waste that would be landfilled, if the facility was sized for the minimum monthly quantity (i.e., 78% of average monthly quantity).

At an EFW facility, major maintenance could be scheduled during the months when the facility is not as busy and receives the minimum waste quantities (i.e., February and December). The peak quantities in May and June are likely due to annual household clean up activities. With targeted diversion efforts these peak quantities could likely be reduced. If the quantities associated with these four months are removed, the differences in seasonal residual waste disposed vary at a minimum of 96% of the monthly average to a maximum of 109%. This more narrow range in seasonal variation means that less waste would have to be imported or landfilled.

The next set of Figures illustrate the projections of residual quantities to be managed between 2011 and 2030 and include:

- the total estimated annual residual waste from Durham and York;
- the maximum annual facility capacity, in any one year, based on a facility sized for 109% of the estimated average monthly quantity;
- the additional quantity of imported/IC&I waste required for a facility sized for the maximum monthly quantity;
- the minimum annual facility capacity, in any one year, based on a facility sized for 96% of the estimated average monthly quantity;

- the annual quantity of waste to be sent to landfill for a facility sized for the minimum monthly quantity.

Figure 7 illustrates the residual waste quantities assuming a constant 65% diversion rate and the more narrow seasonal variation between 109% and 96% of the average monthly quantity.

Figure 7 Tonnes of Residual Waste to be Managed at 65% At-Source Diversion with Narrow Seasonal Variation

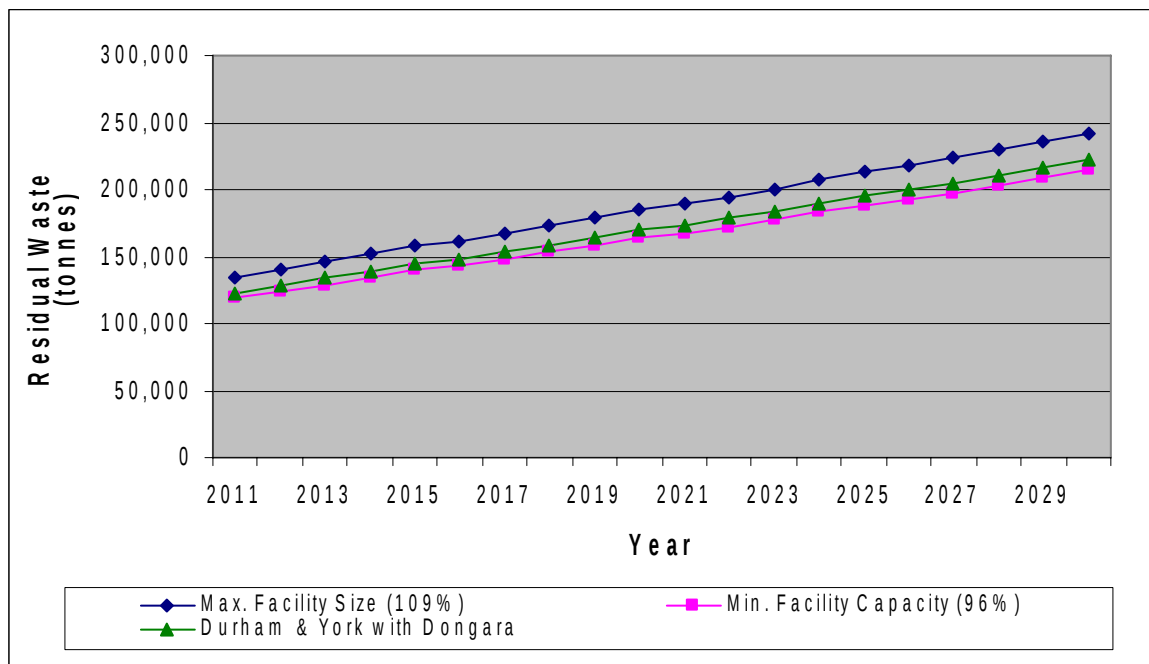


Figure 8 illustrates the residual waste quantities assuming a constant 60% diversion rate and the more narrow seasonal variations between 109% and 96% of the average monthly quantity.

Figure 8: Tonnes of Residual Waste to be Managed at 60% Diversion with Narrow Seasonal Variation

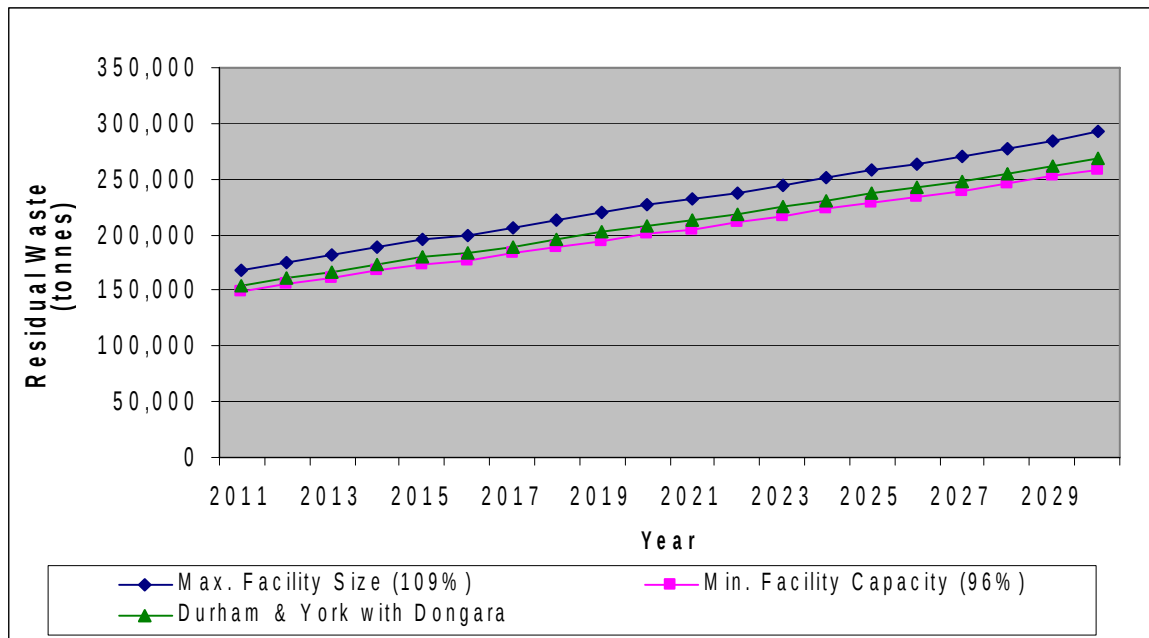
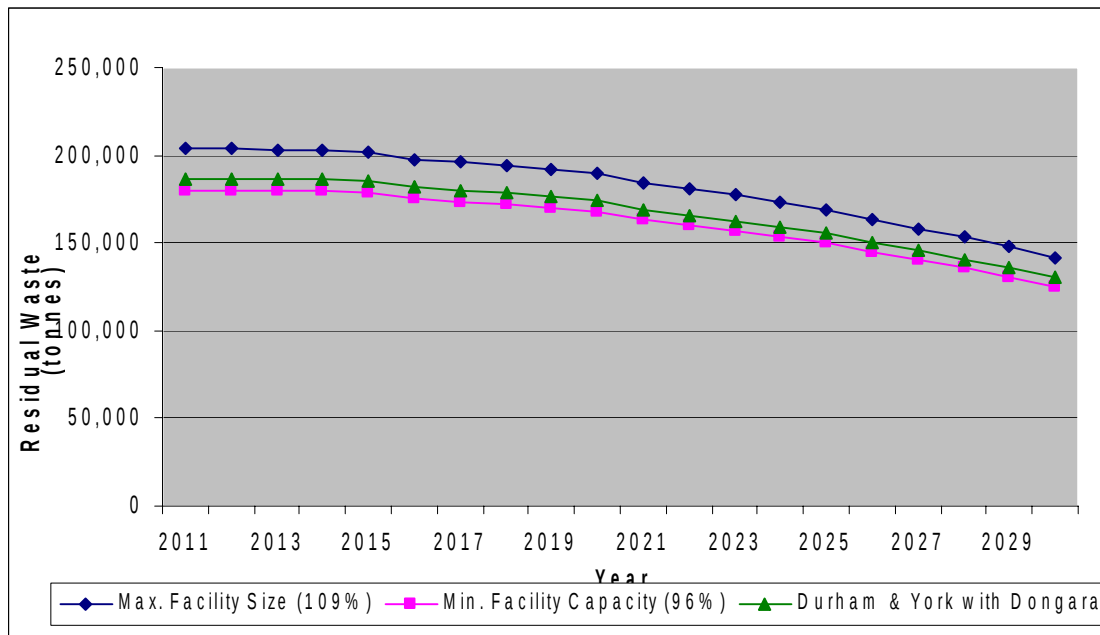


Figure 9 presents the estimated quantities of residual waste assuming 55% diversion at 2011 incrementally rising to 75% diversion by 2030. The more narrow seasonal variation is between 109% and 96% of the average monthly quantity.

Figure 9: Tonnes of Residual Waste to be Managed at 55%-75% At-Source Diversion with Narrow Seasonal Variation



For Figures 7 through 9, for the first year, the difference between the top two data points is the quantity of imported waste required, if the facility was sized for the maximum monthly quantity (i.e., 109% of average monthly quantity). The difference between the lower two points represent the amount of waste that would be landfilled, if the facility was sized for the minimum monthly quantity (i.e., 96% of average monthly quantity).