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December 23, 2021

Ontario Energy Board
P.O. Box 2319
27th Floor
2300 Yonge Street
Toronto, Ontario
M4P 1E4

Attention: Ms. Christine Long, Registrar and Board Secretary

Dear Ms. Long:

Re: EB-2020-0059 / Waterloo North Hydro Inc. Line Loss Plan

Pursuant to Ontario Energy Board (OEB) Decision and Rate Order EB-2020-0059 issued on December 10, 2020, Waterloo North Hydro Inc. Settlement Agreement, Section 2.4, WNH agreed to prepare over the course of 2020-2021, a plan to reduce distribution losses as much as reasonably possible through cost-effective measures and shall file the plan with the OEB when complete.

WNH has forwarded the PDF version of the plan via the Board's web portal and forwarded the PDF to all parties concerned with this proceeding. WNH has not provided hard copies, as outlined in the OEB Digitization Program Announcement released June 23, 2020.

If there are any questions, please contact Amita Pande, Supervisor of Regulatory Affairs at 519-886-5090, extension 5212, apande@wnhydro.com or me at 519-888-5542, asingh@wnhydro.com.

Yours truly,

A.P. Singh

Albert P. Singh, MBA, CPA CGA
Vice-President, Finance and CFO

Waterloo North Hydro Inc.

Distribution Loss Reduction Plan

2021 - 2025

December 23, 2021

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EXECUTIVE SUMMARY

The purpose of this report is to provide a consolidated view of Waterloo North Hydro Inc.'s (WNH) historical Distribution Loss Reduction Plan and to inform WNH's Senior Executive Team (Executive) as to where additional potential areas of loss reduction may exist.

Preliminary investigations and analyses used to inform this report found WNH to be in a favourable position with regards to distribution losses. WNH's losses have been in a downward trend since 2005 and in 2020 stood at 2.93%. WNH's losses over the last five years have ranged between 2.93% and 3.58%, well below the Ontario Energy Board's (OEB) recommended threshold of 5% and consistently at or below the Ontario provincial average for electricity distributors.

WNH has a relatively large rural service area. Line losses in rural areas are typically higher than those in urban areas due to longer power lines with fewer customers per kilometer of line. Distribution transformer (Tx) losses also tend to be higher in rural distribution because of the minimum practical size of distribution transformers and the lack of load diversity when only supplying a single customer. Rural areas have also been historically serviced by subtransmission lines requiring an extra stage of transformation between the grid-connected transformer stations and the customer's distribution transformer. When benchmarking against its peers, in 2020, there were only nine electricity distributors in the province with lower distribution losses as a percentage of energy sales. All of these distributors had a rural area smaller than that of WNH.

The report recommends that WNH's existing practices continue, as they have been effective at reducing distribution system losses while achieving other business objectives.

The report also identifies four opportunities for further loss reduction. Over the 2021-2025 forecast period, WNH will initiate more fulsome investigations into the cost effectiveness of these opportunities and identify potential projects/programs. The cost-effective measures to reduce line losses will be prioritized against other capital projects in accordance with the prioritization processes outlined in WNH's Distribution System Plan (DSP). This will ensure that all utility priorities are best achieved and overall capital expenditures are maintained at a reasonable level within current budgets and operational measures.

Cost-effective measures not selected for WNH's current forecast investment plans will be incorporated into WNH's next rebasing application and DSP.

1. INTRODUCTION

1.1. Purpose of this Report

Pursuant to the Ontario Energy Board (OEB) DECISION AND RATE ORDER EB-2020-0059, WATERLOO NORTH HYDRO INC issued on December 10th, 2020, Waterloo North Hydro agreed to prepare a plan over the course of 2020-2021 to reduce distribution losses as much as reasonably possible through cost-effective measures.

Waterloo North Hydro (WNH) also agreed to implement as many of the cost-effective measures set out in that plan as reasonably possible in 2022-2025 and to incorporate the remaining measures in its next distribution system plan.

This report provides a consolidated view of WNH's historical Distribution Loss Reduction Plan and informs WNH's Senior Executive Team (Executive) of opportunities for additional improvements in loss reduction in order to fulfil of its obligations under the rate order.

All information contained in this report is current as of November 30, 2021.

1.2. Description of the WNH Distribution System

1.2.1. <u>Service Area & Customer Demographics</u>

WNH provides regulated electricity distribution services to the City of Waterloo, the Township of Woolwich and the Township of Wellesley. Due to a 2017 Boundary Amendment, WNH's rural service area increased by 11 sq. km in the Township of Perth East, the Township of Centre Wellington, and the City of Cambridge. A breakdown of WNH's customers and service area can be found in **Table 1-1**.

Table 1-1: WNH Customer & Service Area Demographics

MUNICIPALITY	CUSTOMERS	%	SERVICE AREA (sq. km)	%	CUSTOMER DENSITY (per sq. km)
City of Waterloo	44,507	76.9%	65	9.5%	685
Township of Woolwich	9,806	16.9%	328	48.2%	30
Township of Wellesley	3,484	6.0%	269	39.4%	13
Wellington County	67	0.1%	13	1.9%	5
Perth County	10	0.0%	7	1.0%	1
Cambridge	1	0.0%	0	0.0%	7
Total	57,875	100%	683	100%	85

The urban and rural breakdown of WNH's service area and customers are illustrated in **Table 1-2**, and **Table 1-3** respectively.

Table 1-2: Service Area - Rural / Urban Breakdown

MUNICIPALITY	URBAN (sq.km.)	%	RURAL (sq.km.)	%	TOTAL (sq.km.)
City of Waterloo	65	10%			65
Township of Woolwich			328	48%	328
Township of Wellesley			271	40%	271
Wellington County			13	2%	13
Perth County			5	1%	5
Cambridge			0	0%	0
Total	65	9.5%	618	90.5%	683

Table 1-3: Customers - Rural / Urban Breakdown

MUNICIPALITY	URBAN	%	RURAL	%	TOTAL
City of Waterloo	44,507	76.9%			44,507
Township of Woolwich			9,806	16.9%	9,806
Township of Wellesley			3,484	6.0%	3,484
Wellington County			67	0.1%	67
Perth County			10	0.0%	10
Cambridge			1	0.0%	1.0
Total	44,507	76.9%	13,368	23.1%	57,875

WNH has a significantly higher percentage of rural service area than most other Ontario distributors. Of the 59 distributors reported in the 2020 OEB Yearbook for Electricity Distributors, only eight distributors have a larger percentage of rural service area than that of WNH.

Line losses in rural areas are typically higher than those in urban areas due to longer power lines with fewer customers per kilometer of line. Distribution transformer losses also tend to be higher in rural distribution because of the minimum practical size of a distribution transformer and the lack of load diversity when only supplying a single customer per transformer. Rural areas have also been historically serviced by subtransmission lines requiring an extra stage of transformation between the grid connected transformer stations and the customer's distribution transformer.

In spite of these factors contributing to higher distribution losses, only nine distributors in the province had lower percentage distribution losses than WNH in 2020. Of those nine lowest-loss distributors, all had rural areas smaller than that of WNH.

1.2.2. WNH Points of Supply

WNH is connected to the Hydro One Networks Inc. (HONI) Transmission System (HONI Tx) through five grid connected Dual Element Spot Network (DESN) Transformer Stations as illustrated in **Table 1-4**. Four (4) of these are owned and operated by WNH. One (1), Elmira Transformer Station (ELTS), is owned and operated by HONI and is embedded inside of WNH's service territory. WNH owns two feeders and portions of the third feeder emanating from the ELTS. Approximately 80% of the ELTS load is supplied to WNH customers with the remaining load supplied to HONI customers in nearby Wellington County.

Table 1-4: WNH Transmission Points of Supply

#	Transformer Stations	Owned & Operated by	Supplied By	HONI TX Line	HV (kV)	Station Location	LV (kV)	Tx ID	Tx ONAF Rating (MVA)	10 day LTR (MVA)
1	HMSTS 'A'	WNH	HONI Tx	D6V	230	Waterloo	13.8	T1	50	69
				D7V	230			T2	50	
2	HMSTS 'B'	WNH	HONI Tx	D7V	230	Waterloo	13.8	T3	83	110
				D6V	230			T4	83	
3	MTS #3	WNH	HONI Tx	D6V	230	Waterloo	27.6	T1	67	85
				D7V	230			T2	67	
4	ERTS (Note1)	WNH	HONI Tx	D10H	115	Waterloo	13.8	T1	50	75
				D8S	115			T2	50	
5	ELTS	HONI	HONI Tx	D10H	115	Woolwich	27.6	T1	42	62
								T2	42	

WNH also receives electrical supply at three < 50 kV (Dx) points of supply listed in **Table 1-5** from 3 neighbouring distributors; Hydro One Distribution (HONI Dx), Kitchener-Wilmot Hydro (KWHI) and Energy+.

Table 1-5: WNH Points of Supply < 50 kV

	Feeder ID	Supplied From	Supply Point Location	LV (kV)	Load Capacity at WNH Boundary (MVA)	Generation Capacity at WNH Boundary (MVA)
1	73M7	HONI Dx	Woolwich	44.0	8.0	4.8
2	9M4	KWH Dx	Wellesley	27.6	6.0	3.6
3	21M25	Energy+ Dx	Woolwich	27.6	14.3	8.6

In addition to the transformer stations noted in **Table 1-4**, WNH's distribution network includes five rural distribution stations operating at < 50 kV (**Table 1-6).**

Table 1-6: WNH Municipal and Distribution Stations in Service

	DS	Owned & Operated by	Supplied By	Location	HV (kV)	LV (kV)	Tx ID	Transformer Rating (MVA)
1	DS#27	WNH	WNH	Wallenstein	27.6	8.32	T1	3.6
2	DS#28	WNH	WNH	Floradale	27.6	8.32	T1	5.0
3	DS#29	WNH	WNH	St Jacobs	27.6	8.32	T1&T2	3.6
4	DS#30	WNH	WNH	Zubers Corners	44.0	8.32	T1	5.0
5	DS#31	WNH	WNH	Bloomingdale	27.6	8.32	T1	5.0

1.2.3. Distribution Voltages

WNH distributes electricity to its customers at voltages of 8.32 kV, 13.8 kV and 27.6 kV. WNH also has a small 44 kV subtransmission circuit supplying one of its 8.32 kV distribution stations.

1.2.4. Distribution Circuits

WNH distributes electricity to its customers over 47 circuits at distribution voltages of 27.6 kV, 13.8 kV and 17 circuits at a distribution voltage of 8.32 kV. WNH's distribution system includes approximately 1,072 km of overhead and 580 km of underground electrical circuits.

2. HISTORICAL LOSS PERFORMANCE

WNH reviews its distribution system losses on a regular basis and under the OEB's Reporting and Record Keeping Requirements (RRR), reports its actual distribution losses annually. The results can be found in the annual OEB Yearbook of Ontario Electricity Distributors (Yearbook).

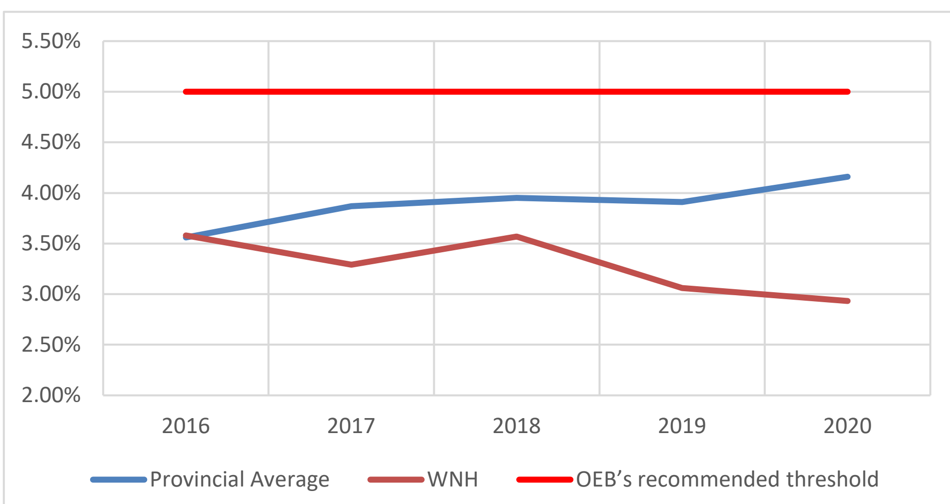
A summary of historical distribution system losses calculated from the "Consolidated Key Metrics of the Ontario Electricity Distributors Sector" found in the various Yearbooks as well as WNH's reported loss factors are provided in **Table 2-1.**

Table 2-1: Annual Distribution System Losses *

Year	Provincial Average	WNH	Variance
2016	3.56%	3.58%	0.02%
2017	3.87%	3.29%	-0.58%
2018	3.95%	3.57%	-0.38%
2019	3.91%	3.06%	-0.85%
2020	4.16%	2.93%	-1.23%
5 Year Ave	**3.89%**	**3.29%**	**-0.60%**

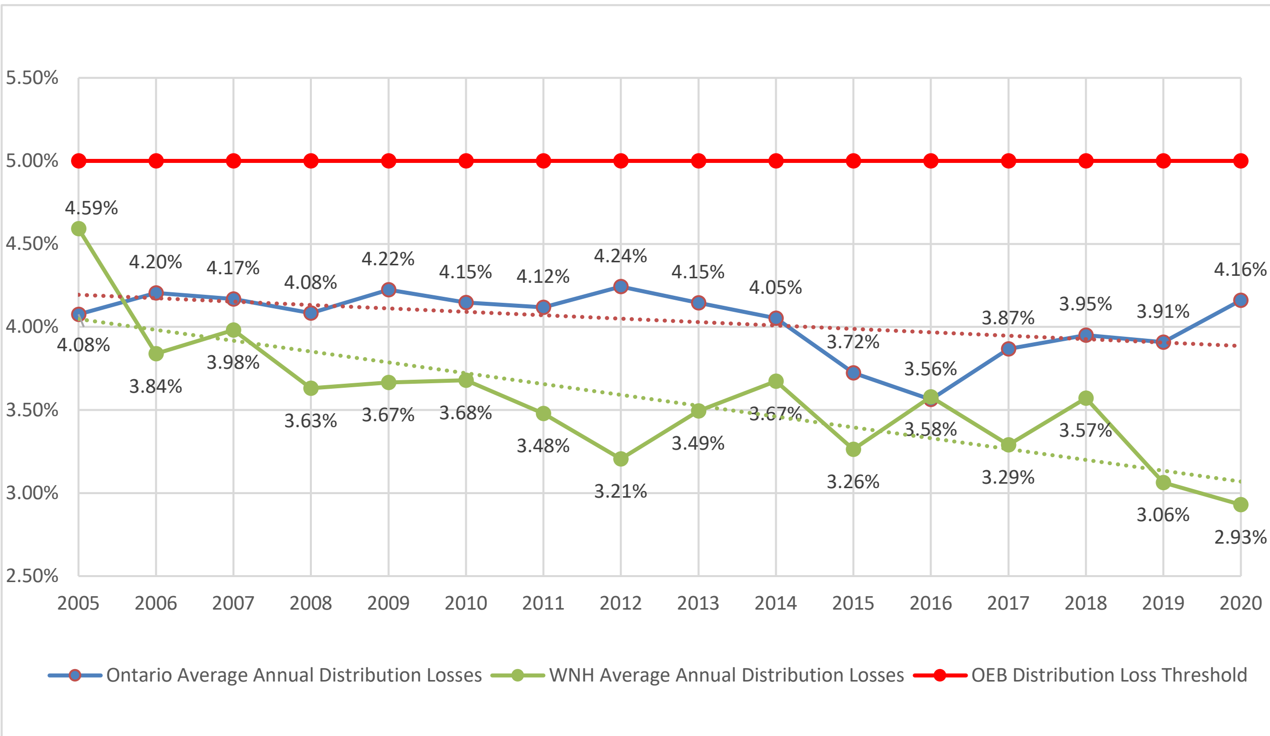
Percent Losses = (Total kWh Distributed (Purchased) - Total kWh Delivered (Billed)) / Total kWh Distributed (Purchased)
Total kWh Distributed (Purchased) includes WNH's supply facilities losses (TS).

Figure 2-1: 5-Year Distribution System Loss Tends



WNH's losses over the last 5 years have ranged between 2.9% and 3.6%, well below the OEB's recommended threshold of 5% as set out in the OEB's document "Ontario Electricity Distributor Practices Relating to Management of System Losses (June 23, 2008)". WNH's historical losses are also consistently at or below the Ontario provincial average for electrical distributors. **Figure 2-2** illustrates WNH's distribution loss performance since 2005.

Figure 2-2: Distribution System Loss Tends 2005 - 2020



3. DISTRIBUTION LOSS COMPONENTS

The term "distribution line losses" refers to the difference between the amount of energy delivered to the distribution system and the amounts of energy billed to customers. Distribution line losses are comprised of two types: technical and non-technical losses.

1. Technical losses on distribution systems are primarily due to heat dissipation resulting from (a) current passing through resistance in conductors and (b) from magnetic losses in transformers, which include a conductor loss and a core loss. The core loss does not vary with loading. Technical losses can be estimated analytically.

2. Non-technical losses occur as a result of theft of power, billing errors, metering inaccuracies and unmetered energy. Such losses cannot be quantified analytically other than by subtracting technical losses from total losses.

Direct measurement of actual losses is not feasible. Instead, WNH relies on high-level studies to estimate the magnitude, composition and distribution of system technical losses based on aggregate metering information for energy purchases, energy sales and system modeling methods. Recent work completed by WNH based on 2020 data has estimated the components of WNH's distribution system losses, the results of which can be found in **Table 3-1**.

Table 3-1: Distribution System Loss Estimate (2020)

TECHNICAL LOSSES	% Losses
Transformer Station (TS)	0.36%
Primary Lines	0.87%
Distribution Stations	0.13%
Distribution Transformers	0.20%
Secondary Lines	0.40%
Total	**1.96%**
NON-TECHNICAL LOSSES	
Metering	0.26%
Other	0.71%
Total	**0.97%**
TOTAL DISTRIBUTION LOSSES (Model)	2.93%
2020 Actual Losses	2.93%

4. HISTORICAL DISTRIBUTION SYSTEM LOSS REDUCTION MEASURES

4.1. TECHNICAL LOSSES

Historically, WNH has not undertaken measures solely for the purpose of loss reduction. Typically, loss reduction initiatives are capital intensive and are seldom cost effective when based on their own merits. Instead, loss reduction considerations are incorporated into ongoing planning, design, operation, purchase, upgrading and replacement of WNHs' distribution infrastructure. Although driven by other priorities, **Section 2** illustrates that loss reduction has been a co-beneficiary of these initiatives.

Losses are inherent to the distribution of electricity and cannot be fully eliminated; however, opportunities can exist to achieve incremental reductions in distribution system losses. WNH maintains an electrical system model in a power system-modeling platform (Synergi). This is used to regularly perform power system analysis to correct for power factor and voltage/current violations on its distribution system. These analyses assist WNH in the identification of opportunities for system enhancements, which can lead to incremental improvements in system losses. It should be noted however, that as losses are reduced, further incremental improvements become more costly to achieve.

Activities that WNH regularly undertakes that continue to mitigate line losses are included in the following sections.

4.1.1. Voltage Conversion

Voltage conversion projects are capital intensive and generally are not cost effective when solely based on loss reduction savings. WNH implements voltage conversion measures as part of System Expansion and System Renewal activities where other benefits accrue. Typically, these measures have resulted in system voltages being increased from 4.16 kV and 8.32 kV to 13.8 kV and 27.6 kV. The higher voltages result in lower line losses. In addition, 4.16 kV and 8.32 kV distribution station transformers have been phased out in the process, eliminating their associated losses.

WNH has eliminated all 4.16 kV distribution from its distribution system replacing it with more efficient 13.8 kV and 27.6 kV distribution. WNH has also converted a significant portion of its legacy 8.32 kV rural distribution system to more efficient 27.6 kV distribution. Since 2016, WNH has removed seven municipal and rural distribution stations from service as a result of System Renewal investments and the resulting conversion to higher voltages. In total WNH has removed 20 distribution stations from service since 2005.

4.1.2. Power Factor Correction

WNH has obligations to maintain system voltages and power factor within certain parameters that fall under the Distribution System Code, namely Canadian Standards Association CAN3-235, and the IESO Market Rules, Chapter 4. Maintaining acceptable power factor levels serves to improve voltage regulation and reduce power losses.

Power factor correction is achieved through application of shunt capacitor banks. Currently, WNH has 21.25 MVAR of fixed capacitance distributed on its distribution system. An addition, 9 MVAR of capacitance is also applied at a Hydro One Transformer Station supplying WNH distribution circuits.

Table 4-1: Installed kVAR

Voltage Level	kVAR
8.32 kV	100
13.8 kV	16,650
27.6 kV	4,500
Hydro One 27.6 kV	9,000
Total	30,250

These capacitors reduce feeder losses by providing reactive power compensation, thereby reducing the current flow in the distribution line. WNH has targeted feeders with the poorest power factors generating the highest contributions to loss reduction. WNH’s distribution feeder power factors average approximately 96.1 and typically range from 0.86 to 0.99 depending on feeder loading. WNH’s modelling has estimated a reduction of supply facility and line losses of approximately 2% due to installed capacitors.

WNH has sought to achieve additional loss reduction with the installation of switched capacitor banks; however, this has met with limited success. Power quality issues and resulting customer complaints due to switching surges has been problematic, especially in urban environments. This has resulted in their limited use. VAR injection methods requiring more sophisticated technologies are available but also come at substantially increased costs. Given WNH’s relatively low distribution losses and already high feeder power factors, further work in this area has not been identified as a priority.

4.1.3. Power System Load Balancing – Feeder & Phase

The total losses in the three phases of an unbalanced system are higher than that of a balanced system. WNH activities include both phase and feeder load balancing to improve customer voltages and reduce line losses. This generally entails circuit switching but can also require physical changes to load connections, changing of open switching points, or other modifications to the distribution system.

A considerable part of the WNH's distribution system consists of single-phase loads, making the power flow in three-phase feeders difficult to balance. This is especially true in the rural areas, which characteristically have very long single-phase lateral lines. **Table 4-2** provides a characteristic breakdown of WNH's primary circuits.

Table 4-2: WNH Distribution Circuits

Circuit Type	Single Phase	% of Total	Three Phase	% of Total	Total
Overhead Primary Circuits (km)	368	34%	704	66%	1,072
Underground Primary Circuits (km)	511	89%	64	11%	575
Total Primary Circuits (km)	879	53%	768	47%	1,647

Distribution systems can never practically be fully balanced and any gains made will deteriorate over time, as unbalance will recur with changes in customer load and generation. Power system load balancing is an ongoing activity at WNH.

4.1.4. Upgrading Line Conductors

The conductor size is typically optimized through the planning process, when a feeder is initially designed and constructed. The sizing of conductors and cables is normally determined by considering their thermal capacity, the amount of voltage drop from source to end of line, and the circuit's role in the overall connectivity of the distribution system. Building agility into a distribution system requires the movement of power flows, which larger conductors facilitate. Loss reduction is a co-beneficiary of these initiatives. Although larger conductor sizes provide lower line (I^2R) losses, they also require greater capital expenditures and WNH strives for a balance between these competing needs.

As distribution systems evolve over time, conditions change and occurrences of sub-optimally sized conductors will materialize. WNH has found that in most cases reconductoring existing lines alone is not a cost effective loss reduction method due to labour and material costs. In addition, many older lines do not have the physical strength to support the larger conductors under current day standards and would require a complete rebuild to facilitate the new conductor.

To be cost effective, WNH's approach has been to bundle conductor uprating with System Access and Renewal projects that have other drivers.

4.1.5. Distribution Transformer Efficiency and Sizing

Distribution system losses can be reduced by utilizing higher efficiency transformers and by properly sizing the distribution transformers to customer loads.

The costs of replacing existing transformers are typically beyond any loss reduction benefits achieved. Distribution transformers should be sized appropriately on initial installation in order to achieve minimal transformer losses. WNH takes time to review a customer's business type, consumption pattern and load growth expectations and not just their service size. Although this requires extra work, the result is normally a smaller transformer with fewer losses. Aside from the initial installation, other events such as customer service changes and system rebuild projects provide WNH with opportunities to re-examine transformer sizing and adjust appropriately.

WNH is a member of the GridSmartCity Cooperative (GSC), an organization consisting of 15 Ontario distributors that pool resources, initiatives and funding in the areas of Engineering, Operations, Regulatory, Customer Service and IT program management. WNH utilizes GSC purchasing standards and two new Transformer Loss Evaluation Formulas that have been developed through this collaboration to drive purchasing efforts towards more cost effective and efficient distribution transformers.

4.2. NON - TECHNICAL LOSSES

Non-technical losses include all unaccounted for energy or all losses other than technical losses. These losses occur as a result of:

i) theft of power
ii) metering inaccuracies
iii) unmetered energy
iv) billing errors

Non-technical losses cannot be directly measured and are normally estimated by the subtraction of technical losses from the difference between purchased and billed energy.

Historically, WNH looked to Hydro One, which had estimated the contribution of non-technical losses to be equivalent to 10% of technical losses. For WNH this would have represented 0.3% – 0.45%. In 2005, Kinectrics completed a study for Hydro One of the energy losses on its electric power distribution system. The report filed as part of the support for Hydro One's rate application to the OEB DISTRIBUTION SYSTEM ENERGY LOSSES AT HYDRO ONE Kinectrics Inc. Report No.: K-011568-001-RA-0001-R00 July 20, 2005, concluded a reasonable estimate for theft and other non-technical losses of 1.2% of energy sales.

Based on preliminary work completed by WNH in 2021, non-technical losses have been estimated to be 1.14% of purchased energy or 1.17% of billed energy.

Measures that WNH have utilized to reduce non-technical losses include,

i) diligent adherence to Measurement Canada's Meter Accuracy Verification program which includes regular sample testing of revenue meter populations for meter accuracy;
ii) regular inspection and cross phase testing of polyphase transformer type meter installations to uncover for inaccuracies and failed equipment;
iii) visual inspections of meters for broken seals, tampered meters and bypass wires;
iv) performing random checks of billing multipliers;
v) investigating exception reports that highlight zero usage readings, meters that show consumption with no billing account, and other material variances in consumption;
vi) working with local law enforcement to assist with theft of power issues.

5. FORECAST LOSS REDUCTION MEASURES (2021 – 2025)

5.1. Continuation of Historic Loss Reduction Measures

As outlined in the previous sections of this report, WNH has employed continued and effective measures that have resulted in reduced distribution system losses over time. The success of these measures has led WNH to hold a favourable standing amongst Ontario distributors with regards to distribution system losses.

In addition to loss reduction, these measures have provided multiple co-benefits in terms of improved power quality, system access, asset condition and operational agility. As such, WNH plans to continue to employ these historical measures in a cost effective manner over the forecast period.

5.2. Further Opportunities for Distribution Loss Reduction

Taking account of the aforementioned, WNH recognizes there are challenges and opportunities to explore to continue to become more efficient and further reduce distribution losses. The following describe further opportunities for loss reduction that have been identified.

5.2.1. Distribution System Loss Model

WNH plans to further study and improve the modelling of its distribution system in order to more accurately estimate its various loss components. This will provide greater accuracy and insight that will better inform further investigations in loss reduction. This work is planned for 2022.

5.2.2. Distributed Generation

Generators contribute to the distributor's kW demand requirements but generally do not contribute to the VAR demand requirements of the distribution system. As such, the distributor must supply these VAR requirements or face deteriorating power factor with increasing generation. WNH plans to study the impact of distributed generation on WNH's distribution model to better understand how system performance and efficiency (losses) can be maintained or even improved. WNH will also study if requiring generators to provide the required VARS is a cost effective option.

Seen as an enhancement to the work described in **Section 5.2.1**, this work will better inform WNH of current generation impacts and impacts of further generation investments or non-wires alternatives. This work is planned for 2022.

5.2.3. Grid Edge Volt-VAR Control

Volt-VAR management (VVM) can reduce energy losses by minimizing reactive power flows on the distribution system, keeping voltages within the limits, and reducing peak demand. WNH currently provides a degree of VVM through its existing installation of distributed capacitor banks. These are larger fixed units that provide spot compensation on the distribution system feeders, reducing reactive power flows and improving feeder voltages.

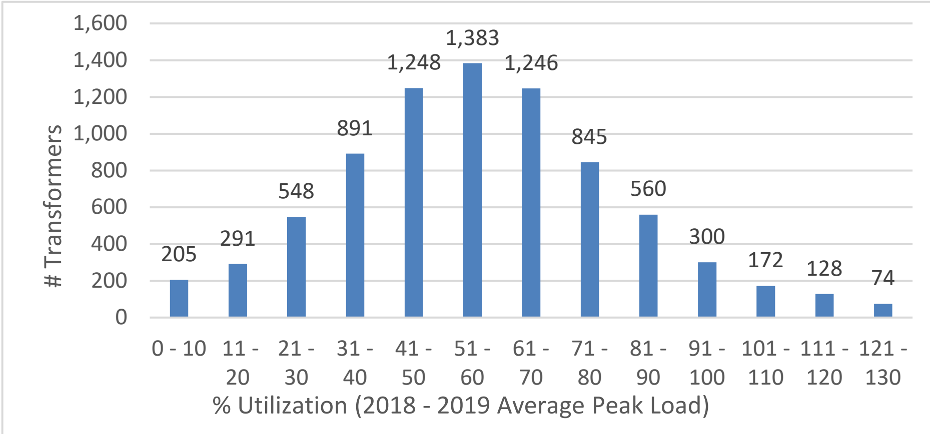
Grid Edge VVM (GEVVM) is an enhanced version of VVM that can provide increased granularity in Volt-VAR control allowing improved voltage profiles of the distribution feeder. GEVVM attempts to further minimize distribution losses and demand without causing voltage/current violations. WNH also recognizes that the granularity of this type of VAR injection may alleviate previously mentioned power quality issues associated with the use of larger switched capacitor banks.

WNH has made preliminary inquiries into this technology, and although capital intensive, will enter into a cost /benefit analysis of this technology. The analysis work is planned for 2023 following the planned distribution system model enhancements planned for 2022. If found cost effective, a pilot project could be implemented in 2024.

5.2.4. Distribution Transformer Sizing

In spite of WNH's past efforts to optimally size its distribution transformer fleet, distribution systems evolve over time, conditions change and occurrences of sub-optimally sized transformers will materialize. The results of recent analysis shown in **Figure 5-1** indicate there may be opportunities for improvement.

Figure 5-1: WNH Distribution Transformer Utilization (%)



WNH plans to incorporate into its forecasted distribution loss program a review of its transformer sizing practices including the cost-of-losses formula, loss-of-life, load growth and inventory considerations. Consideration will be given to the cost of inventory for stocking smaller and/or a greater number of transformer sizes. This work is planned for 2023.