December 01, 2021

CLEAN WATER FOR FIRST NATIONS: IS THE GOVERNMENT SPENDING ENOUGH?

OFFICE OF THE PARLIAMENTARY BUDGET OFFICER
BUREAU DU DIRECTEUR PARLEMENTAIRE DU BUDGET

The Parliamentary Budget Officer (PBO) supports Parliament by providing economic and financial analysis for the purposes of raising the quality of parliamentary debate and promoting greater budget transparency and accountability.

This report builds on the PBO's 2017 report and responds to a request from Senator Renée Dupuis to examine budget sufficiency for First Nations water and wastewater systems on reserve.

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RP-2122-021-M_e

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Executive Summary

In 2015, the Government committed to eliminating all long-term drinking water advisories on First Nations reserves by March 31, 2021. In December 2017, PBO published a report that found that the total historical spending since 2011-2012 and planned funding announced in Budget 2016 would only cover between 50 and 70 per cent of the total investment needs of First Nations water and wastewater (W&WW) infrastructure.

The Government did not meet its March 31, 2021 deadline to eliminate all long-term drinking water advisories on First Nations reserves. Since then, significant additional federal investments have been announced, including nearly $1.5 billion starting in 2020-2021, and $114.1 million a year ongoing thereafter announced in the Fall Economic Statement 2020, "to accelerate work to lift all long-term drinking water advisories and stabilize funding for water and wastewater infrastructure [...] in First Nations communities."[1] Approximately $1.0 billion over two years, starting in 2022-2023, was also identified in Budget 2021.

This analysis provides an updated estimate of the cost of improving public water and wastewater systems on First Nations reserves to the point where residents can enjoy drinking water and wastewater services comparable to non-First Nations communities of comparable size, and which would eliminate long-term drinking water advisories. This analysis relies on data and cost recommendations from the 2011 National Assessment of First Nations Water and Wastewater systems,[2,3] as in the PBO's previous report, with adjustments to reflect more recent demographic data and system risk assessments. The period of analysis covered is 2016-2017 to 2025-2026.[4]

Table A-1 Estimated Financial Needs and Funding Gap, On Reserve W&WW Infrastructure, 2016-2017 to 2025-2026

($ millions)	
Current Capital Needs	1,122
Future Capital Needs	1,948
Total Estimated Capital Required	3,070
Capital Funding Available	6,352
Capital Gap	**-**
Estimated Average Annual O&M Required	429
Average Annual O&M Available	291
Average Annual O&M Gap	**138**

Sources: PBO calculations based on data from Indigenous Services Canada and the National Assessment of First Nations Water and Wastewater Systems (Regional Reports).

Notes: All values are presented in current prices. PBO's estimates are highly sensitive to population growth and household size assumptions.

PBO finds that the historical spending since 2016-2017 and planned spending until 2025-2026 on W&WW capital is expected to be sufficient to meet the infrastructure needs. PBO estimates the capital needs from 2016-2017 to 2025-2026 to be approximately $3.1 billion, which is broken down into $1.1 billion to cover immediate needs and $1.9 billion for future capital investment until 2025-2026 (Table A-1). The total capital funding available during that period is roughly $6.4 billion.

At the same time, PBO analysis indicates that the historical spending since 2016-2017 and planned spending until 2025-2026 on W&WW operation and maintenance (O&M) will only cover just over two thirds of funding needs, suggesting an annual funding gap of $138 million, on average, to operate and maintain First Nations W&WW systems.[5]

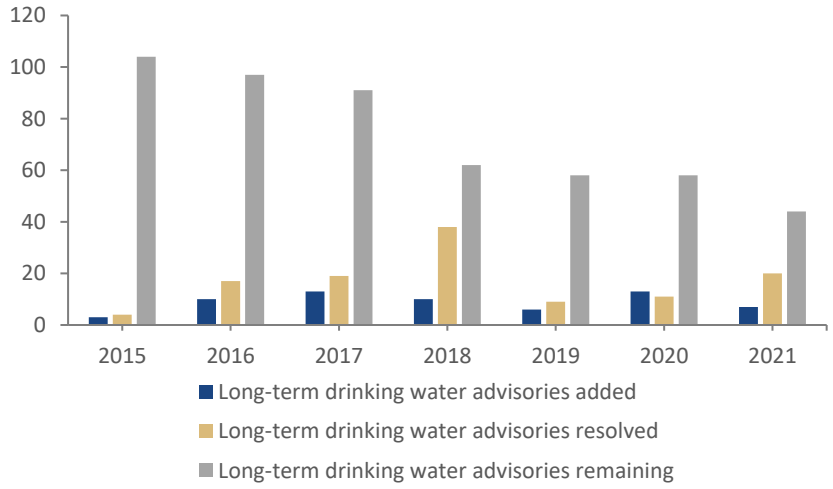
1. Introduction

In 2015, the Government committed to eliminating all long-term drinking water advisories on First Nations reserves by March 31, 2021. Budget 2016 announced $1.8 billion over five years, starting in 2016-2017, to improve First Nations water and wastewater (W&WW) delivery to help achieve this goal.[6]

In 2017, PBO undertook analysis of the budget sufficiency for First Nations W&WW infrastructure and examined how that compared to the funding announced in Budget 2016. PBO's December 2017 report found that the total historical spending since 2011-2012 and planned spending announced in Budget 2016 would only cover between 50 and 70 per cent of the total investment needs of First Nations W&WW infrastructure depending on the on-reserve population growth assumptions and the capital investment options.

The Government did not meet its March 31, 2021 deadline to eliminate all long-term drinking water advisories on First Nations reserves. As of October 15, 2021, there were 44 long-term drinking water advisories in effect in 32 communities with systems financially supported by Indigenous Services Canada (ISC) (Figure 1-1).[7]

Figure 1-1 Long-Term Drinking Water Advisories



Source: Indigenous Services Canada.

Notes: Annual amounts represent number of long-term drinking water advisories as of December of that year. 2021 data is as of October 15, 2021.

This updated analysis is motivated by continued parliamentary interest in the topic. It estimates the cost of improving public water and wastewater systems on First Nations reserves to the point where residents can enjoy

drinking water and wastewater services comparable to non-First Nations communities of comparable size, and which would eliminate long-term drinking water advisories. PBO then compares the estimated cost needed to available W&WW funding.

2. How Much Money Is Being Spent?

2.1. Federal Government Investments

On First Nations reserves south of the 60th parallel, the federal government has a responsibility to ensure safe drinking water.

Indigenous Services Canada (ISC) provides funding for water and wastewater systems on First Nations reserves for the following: design, planning, upgrading, construction, procurement, commissioning, operation and maintenance (O&M), and training and certification of operators.[8]

Federal support is only provided to public water and wastewater systems on reserve. As noted in the PBO's previous report, federal commitments relating to First Nations W&WW only apply to those systems financially supported by ISC. There are currently 1,298 public W&WW systems on 550 First Nations that receive funding from ISC.

Since the funding investment of Budget 2016, the Government has announced additional investments relating to First Nations W&WW, including:

- Budget 2017 commitment of an additional $49.1 million over three years;[9]
- Budget 2018 commitment of an additional $172.6 million over three years;[10] and
- Budget 2019 commitment of an additional $739 million over five years with $184.9 million ongoing.[11]

The Government's 2020 Speech from the Throne further committed to making "additional resiliency investments to meet the clean drinking water commitment in First Nations communities."[12] The Fall Economic Statement 2020 announced nearly $1.5 billion starting in 2020-2021, and $114.1 million a year ongoing thereafter "to accelerate work to lift all long-term drinking water advisories and stabilize funding for water and wastewater infrastructure in First Nations communities."[13] Nearly $1.1 billion of the $1.5 billion investment is set to be spent by the end of the current fiscal year.

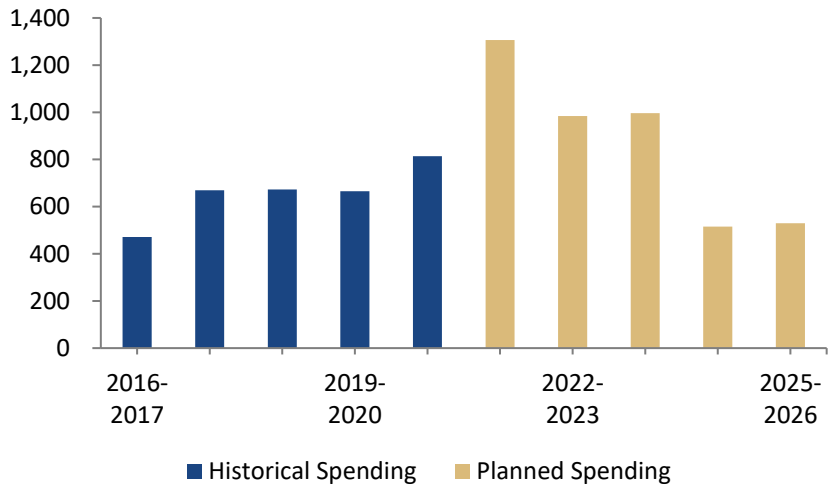
Approximately $1.0 billion over two years, starting in 2022-2023, was also identified in Budget 2021.

As of 2020-2021, all water and wastewater O&M costs are covered by ISC, based on the department's O&M funding formula. Prior to this, 80 per cent of O&M costs were covered by ISC based on the formula, with First Nations responsible for the remainder.[14,15]

As shown in Figure 2-1, ISC's planned spending from 2021-2022 to 2025-2026 totals approximately $4.3 billion. This compares to approximately $3.3 billion in nominal historical spending from 2016-2017 to 2020-2021.[16]

Figure 2-1 Actual and Planned ISC Spending on First Nations W&WW

$ millions



Source: Indigenous Services Canada.

Notes: Spending total for 2020-2021 includes expenses up to April 26, 2021. The department indicates these are subject to change. Spending for 2019-2020 onwards includes funding under the New Fiscal Relationship Grant.

Other entities may contribute, at much lower levels, to the on-reserve W&WW management. For example, Aboriginal general governments receive transfers from provincial and territorial governments. In its analysis, PBO assumes that a portion of these funds could be used as funding for on-reserve W&WW systems.[17]

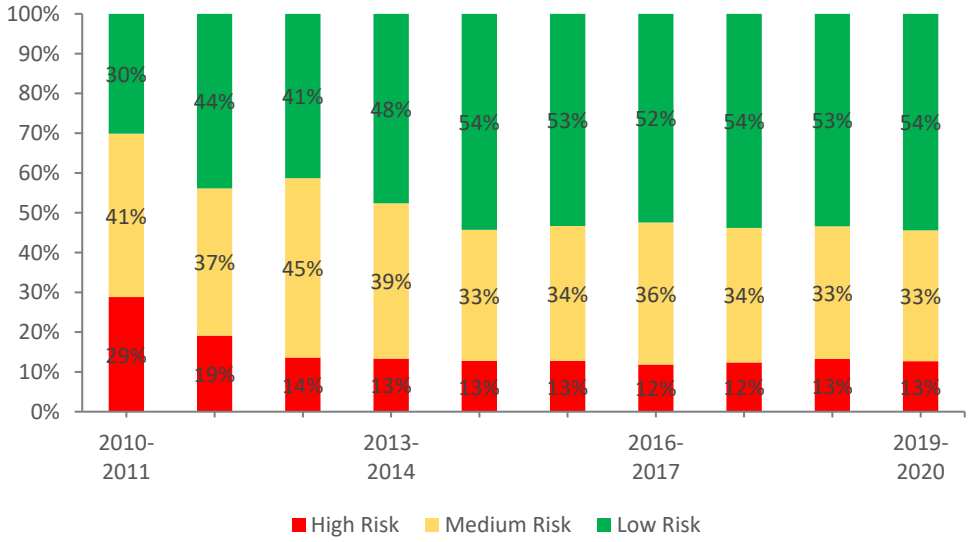
2.2. Risk Assessments

Water and wastewater systems on First Nations reserves undergo annual risk assessments "to help ensure that the systems operate effectively and that the health and safety guidelines are met".[18] Several system elements are assessed

and assigned values of risk, which are weighted to determine an overall system risk. A detailed explanation of risk components and calculations can be found in the PBO's 2017 report.[19]

Systems classified as medium and high overall risk have deficiencies that need to be corrected. Over the past decade, the share of systems with medium and high overall risk rankings has decreased (Figure 2-2). In 2010-2011, of the assessed systems 29 per cent were classified as high overall risk; 41 per cent as medium overall risk; and 30 per cent as low overall risk. In 2019-2020, of the assessed systems 13 per cent were classified as high overall risk; 33 per cent as medium overall risk; and 54 per cent as low overall risk.

Figure 2-2 Share of W&WW Risk Rankings, All Regions



Sources: PBO calculations based on data from Indigenous Services Canada and the National Assessment of First Nations Water and Wastewater Systems (Regional Reports).

Importantly, while there have been overall improvements between 2010-2011 and 2019-2020, there have not been improvements every year. The most important improvements took place up to 2014-15, with the share of water and wastewater systems with medium and high overall risk remaining virtually unchanged across assessed systems since that year (Figure 2-2). During that same period, annual spending by ISC on First Nations W&WW systems more than doubled.[20]

ISC indicates that it takes time to improve water system infrastructure (including several years to plan, design and build a water system) and operator capacity, suggesting that changes in the risk profile of W&WW systems can appear gradual.

3. Methodology

As mentioned in the PBO's previous report, drinking water treatment cannot be considered independently from wastewater treatment. This analysis estimates the cost needed to improve water and wastewater on First Nations reserves and compares that to available funding.

PBO requested information on First Nations W&WW systems from Indigenous Services Canada, including on reserve demographic data and projections, and results of the annual risk assessments conducted on W&WW systems.[21]

At this time, PBO still finds the 2011 National Assessment of First Nations Water and Wastewater Systems to be the most comprehensive assessment of W&WW systems on reserve that offers cost recommendations. Prepared by Neegan Burnside Ltd., this study assessed the condition of the W&WW assets, identified the capital and O&M needs, and recommended future servicing options for the period of 2010-2020.[22]

PBO's updated analysis relies on data and cost recommendations from the 2011 National Assessment, as in the PBO's previous report, with adjustments to reflect more recent demographic data and system risk assessments provided by ISC. The period of analysis covered is 2016-2017 to 2025-2026.[23]

The cost components of this analysis comprise:

Capital Costs: Includes current capital needs, which are the costs of upgrading existing facilities to comply with W&WW safety protocols,[24] and future capital costs, which are the costs to expand facilities and construct additional facilities to meet the population and household needs over the specified 10-year period.

O&M Costs: Includes the cost of operator training and certification as well as monitoring.

Key cost drivers to this analysis include:

Baseline population: Population and household data by band from the 2016 Census were used to determine the total population and households on reserves with public W&WW systems. For bands without 2016 Census data, data provided from the Indian Registration System were adjusted to reflect full on reserve population and households.

Population Growth: The 2016 population estimates were grown using projected growth rates of population on reserve by region from the Indian Registration System.[25] ISC provided three scenarios of growth. PBO applied rates from the medium growth scenario, which average 1.9 per cent growth

annually. Households were grown in line with corresponding projected population, using average household size by region.

Risk Assessments: Recommended costs by band from the 2011 National Assessment were mapped to the corresponding risk assessments of that time to estimate per household costs by region and risk level. These per household costs were then applied to the updated (2016-2017) distribution of risks and the corresponding number of households.

Updated risk assessments were incorporated into the cost estimates for both current capital needs and O&M.[26] Risk assessments were not used to estimate the cost of future capital needs. PBO assumes that with the investment of current capital needs, all systems should meet W&WW safety protocols. As such, future capital needs were adjusted only for more recent demographic data.

4. Results

PBO estimates the total funding needed to meet current and future W&WW needs on reserve from the period of 2016-2017 to 2025-2026 to be approximately $7.4 billion (Table 4-1). Annual operating and maintenance needs are estimated at $429 million on average. The capital investment needs are estimated at approximately $3.1 billion, which is broken down into $1.1 billion to cover immediate needs and $1.9 billion for future capital investment until 2025-2026.

These estimates are highly sensitive to population growth and household size assumptions.

Table 4-1 Estimated Investment Needs, On Reserve W&WW Infrastructure, 2016-2017 to 2025-2026

($ millions)	
Current Capital Needs	1,122
Future Capital Needs	1,948
Total Estimated Capital Cost	**3,070**
Annual Operation & Maintenance	**429**
Total Estimated Funding Needed, 10-year period	**7,363**

Sources: PBO calculations based on data from Indigenous Services Canada and the National Assessment of First Nations Water and Wastewater Systems (Regional Reports).

Notes: All values are presented in current prices. PBO's estimates are highly sensitive to population growth and household size assumptions.

PBO compared the historical and planned spending on W&WW infrastructure from 2016-2017 to 2025-2026 to the estimated investment needed to determine whether a funding gap exists. Total historical and planned spending includes federal funding from ISC as well as estimated transfers from provincial and territorial governments.[27]

PBO finds that the historical spending since 2016-2017 and planned spending until 2025-2026 on W&WW capital should be sufficient to meet infrastructure needs. PBO estimates the capital needs from 2016-2017 to 2025-2026 to be approximately $3.1 billion, while the total capital funding available during that period should amount to approximately $6.4 billion (Table 4-2).

As mentioned, ISC indicates that it takes time to improve water infrastructure. PBO notes that a low investment rate or a significant delay in the investment completion could negatively affect the condition of the W&WW infrastructure, costing more money and risking service disruption. Therefore, the capital needs could be higher than what is anticipated.

At the same time, PBO analysis indicates that the historical spending since 2016-2017 and planned spending until 2025-2026 on W&WW operations and maintenance will only cover around two thirds of funding needs, leading to an annual funding gap of $138 million, on average.[28]

As noted in the Auditor General of Canada's recent report on Access to Safe Drinking Water in First Nations Communities, if available O&M funding is insufficient, "water-related infrastructure may continue to deteriorate at a faster-than-expected rate, and overall costs may continue to increase as the infrastructure ages."[29]

Table 4-2 Estimated Funding Gap, On Reserve W&WW Infrastructure, 2016-2017 to 2025-2026

($millions)	
Total Estimated Capital Required	3,070
Capital Funding Available	6,352
Capital Gap	-
Estimated Average Annual O&M Required	429
Average Annual O&M Available	291
Average Annual O&M Gap	**138**

Sources: PBO calculations based on data from Indigenous Services Canada and the National Assessment of First Nations Water and Wastewater Systems (Regional Reports).

Notes: All values are presented in current prices. PBO's estimates are highly sensitive to population growth and household size assumptions.

The O&M gap is calculated on an annual basis and expressed in current dollars. The capital gap is the present value of the net balance between the total initial cost and the accumulated 10-year investment. PBO does not consider asset deteriorations to calculate the funding gaps. Including the changing state of the W&WW systems, the cost estimate may increase, as well as the gaps.

Notes

1. Department of Finance Canada. Fall Economic Statement 2020. https://www.budget.gc.ca/fes-eea/2020/report-rapport/toc-tdm-en.html
2. Neegan Burnside Ltd. (2011). National Assessment of First Nations Water and Wastewater Systems – National Roll-Up Report.
3. At this time, PBO still finds the 2011 National Assessment of First Nations Water and Wastewater Systems to be the most comprehensive assessment of W&WW systems on reserve.
4. PBO maintains a 10-year analysis like the one undertaken by the Neegan Burnside study since current and recommended spending includes investment for future needs in addition to current needs. Also, the 10-period cost estimate allows for comparison to historical spending since the government's commitment in Budget 2016, plus the planned spending until 2025-2026 announced in the Fall Economic Statement 2020.
5. PBO has included ISC funding identified for training and monitoring in the amount of available federal O&M funding.
6. Budget 2016. https://www.budget.gc.ca/2016/docs/plan/ch3-en.html
7. Indigenous Services Canada. Ending long-term drinking water advisories. https://www.sac-isc.gc.ca/eng/1506514143353/1533317130660
8. Indigenous Services Canada. Water in First Nations Communities: Roles and responsibilities. https://www.sac-isc.gc.ca/eng/1314034319353/1533665196191
9. Department of Finance Canada. Budget 2017. https://www.budget.gc.ca/2017/home-accueil-en.html
10. Department of Finance Canada. Budget 2018. https://www.budget.gc.ca/2018/home-accueil-en.html
11. Department of Finance Canada. Budget 2019. https://www.budget.gc.ca/2019/home-accueil-en.html
12. Privcy Council Office. Speech from the Throne 2020. https://www.canada.ca/en/privy-council/campaigns/speech-throne/2020/speech-from-the-throne.html
13. See note 1.
14. Indigenous Services Canada. Keeping water systems running and properly staffed. https://www.sac-isc.gc.ca/eng/1614386086902/1614386110385#s2
15. Office of the Parliamentary Budget Officer. Budget Sufficiency for First Nations Water and Wastewater Infrastructure. https://www.pbo-dpb.gc.ca/en/blog/news/FN_Water_Infrastructure
16. These values include historical and planned spending identified for capital, operation and maintenance, training, and monitoring.

17. Aboriginal general governments receive transfers from provincial and territorial governments. PBO includes these amounts so as not to overestimate a funding gap. PBO estimated these amounts in its 2017 report. For this analysis, the previous calculations were grown in line with the historical growth rate of provincial and territorial transfers to Aboriginal general governments.
18. Indigenous Services Canada. Fact Sheet – Risk Assessment of Water and Wastewater Systems in First Nations Communities. https://www.sac-isc.gc.ca/eng/1313687144247/1583950949443
19. (See Appendix C: INAC Risk Level Analysis). Office of the Parliamentary Budget Officer. Budget Sufficiency for First Nations Water and Wastewater Infrastructure.https://www.pbo-dpb.gc.ca/en/blog/news/FN_Water_Infrastructure
20. Office of the Parliamentary Budget Officer. Budget Sufficiency for First Nations Water and Wastewater Infrastructure. https://www.pbo-dpb.gc.ca/en/blog/news/FN_Water_Infrastructure
21. https://www.pbo-dpb.gc.ca/web/default/files/Documents/Info%20Requests/2021/IR0592_ISC_W_and_WW_request_e.pdf

    https://www.pbo-dpb.gc.ca/web/default/files/public/public/IR0602_ISC_Indigenous_W-and_WW_follow-up_request_e.pdf
22. Neegan Burnside Ltd. (2011). National Assessment of First Nations Water and Wastewater Systems – National Roll-Up Report.
23. See note 4.
24. Indigenous Services Canada. Protocols and guidelines for water systems. https://www.sac-isc.gc.ca/eng/1100100034988/1533665779641
25. PBO recognizes that growth rates of total on reserve population could vary from those of the Indian Registration System. However, in the absence of projected growth rates for total on reserve population, growth rates of population on reserve from the Indian Registration System were applied as a proxy.
26. With the exception of the Atlantic region, as the corresponding data was not available. Current capital needs and O&M cost estimates for the Atlantic region were therefore only updated to reflect more recent demographic data.
27. See note 17.
28. See note 5.
29. Auditor General of Canada. Access to Safe Drinking Water in First Nations Communities – Indigenous Services Canada. https://www.oag-bvg.gc.ca/internet/English/parl_oag_202102_03_e_43749.html