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	City of Joliet		Stantec
File:	mem_funding_strategy_20201120.docx	Date:	November 20, 2020

Reference: Joliet Alternative Water Source Program – Funding Strategy Memo**Introduction**

The City of Joliet's Alternative Water Source Program will require large capital investments in new infrastructure regardless of the alternative selected. Escalated to time of construction, current estimates of capital costs range from approximately \$725 million for the Chicago Department of Water Management (CDWM) 30 MGD option to \$1.68 billion for the New Indiana Intake 60 MGD option. Even the least expensive of these alternatives is significantly more capital-intensive than any of Joliet's previous capital programs and requires Joliet to seek considerable funding from external sources.

This memo highlights funding and cost considerations for the CDWM and New Indiana Intake alternatives, explains assumptions applied to analyze those alternatives, illuminates financing sensitivities, discusses affordability, and provides overarching recommendations for funding. The objective of the memo is to share content material to the alternative selection, not to exhaustively present all analysis completed to-date.

Joliet must have a new water source online by 2030. A project of this magnitude requires several years of investment in alternatives analysis, planning, design, and construction. To meet the deadline for a new source of water, Joliet must choose an alternative now. And while near term costs for either alternative are not insignificant, the bulk of capital costs for both alternatives will be associated with the construction phase of the project and incurred between 2025 and 2029. Recognizing there is considerable uncertainty and there will be opportunities to optimize the funding strategy in the future, assumptions must be made today on what financing options will be in five years and beyond to support Joliet's decision.

Joliet will be responsible for new water supply costs. If a regional alternative is selected, Joliet will bear responsibility for a portion of those costs. A regional project is estimated to achieve cost efficiencies in terms of capital and operating, maintenance and replacement (OM&R) costs. Therefore, if a regional water system is selected, Joliet is assumed to realize some of these cost efficiencies. Agreements between regional partners for the formation of a regional water entity will specify the distribution of financial responsibilities in addition to further defining many of the elements of the regional system and contractual expectations. Unknowns related to regional participants - their financial standing and available resources - as well as the ultimate contractual allocation of financial responsibilities also introduce considerable uncertainty. Assumptions related to financial responsibilities for a regional water system have been made for this analysis, but it is understood that these details remain open for review and discussion with the City's potential regional partners.

Reference: Joliet Alternative Water Source Program – Funding Strategy Memo

Understanding current funding options, acknowledging uncertainties, testing sensitivities, and illuminating risks are key to developing a funding strategy now that informs project alternative evaluation and supports ongoing project development. This memorandum is intended to assist the City in its analysis of the new Indiana Intake and CDWM project alternatives. The memo is a supporting document for the CDWM and New Indiana Intake Prospectus documents developed to summarize the 2020 Evaluation and inform the City Council's selection of an alternative. In addition, the memo provides an update to information presented in the December 2019 report, Alternative Water Source Study - Phase II, Appendix O – Funding Strategies.

During 2020, in support of this analysis, the City and consultants frequently sought opportunities to inform, engage, and gather feedback from key stakeholders. In addition to many discussions with the City of Hammond, CDWM, and potential regional partners, financial considerations and analysis were presented on three separate occasions to the City of Joliet Finance Committee. The Finance Committee provided valuable feedback and guidance to the team.

The Cost of Water

The cost of water is a function of water purchase or access costs; capital costs and associated debt service; OM&R costs; and demand. To determine the short-term and long-term cost of water impact to Joliet water customers the City's water rate model and the 50-year Total Cost of Water calculation were updated with current demand projections as well as water purchase and access, capital, and OM&R cost estimates.

The rate model is effective in providing a directional understanding of rate increases and monthly bills but has the potential to emphasize shorter term effects.. Many variables impact the rate model including Joliet's existing system and current cash balances as well as operating reserve and debt service coverage minimums. The 50-year Total Cost of Water analysis applies the net present value (NPV) method that takes into consideration the time value of money. The commonly applied NPV method provides a comparison of project alternatives that incorporates all project costs up until 2079.

A 50-year project life has been assumed in this funding and financial analysis. Unforeseen events and influences will affect project outcomes over the 50-year period. Figures presented in this memo reflect numerous assumptions, estimates, and judgements anticipating results. There are uncertainties inherent in making these forecasts and financial projections. For this reason, estimates included should be viewed as illustrative and not definitive.

Demand

Joliet is currently evaluating four alternatives: a CDWM 30 MGD alternative, a CDWM 60 MGD alternative, a new Indiana Intake 30 MGD alternative, and a new Indiana Intake 60 MGD alternative. The 30 MGD water supply system alternatives for both CDWM and the new Indiana Intake would only serve Joliet's water demand. The 60 MGD alternatives would serve Joliet and other regional communities. Today, Joliet is deciding on a water supply source that will meet estimated demand in 2050. Table 1 summarizes projected Joliet and regional demand in years 2030 and 2050.

Reference: Joliet Alternative Water Source Program – Funding Strategy Memo

Table 1 – Projected Joliet and Joliet Plus Regional Demand

	30 MGD - Joliet Only		60.3 MGD - Joliet Plus Regional Communities	
	MGD	gpm	MGD	gpm
2030				
Average Day	18.30	12,700	29.45	20,500
Maximum Day	22.70	15,750	39.84	27,700
2050				
Average Day	23.61	16,400	40.75	28,300
Maximum Day	29.28	20,350	60.35	41,900

In addition to updated demand projections, 2020 alternatives analyses and discussions have yielded new project details since the 2019 Alternative Water Source Study – Phase II. The cost of water for each alternative includes 1) water supply or access costs; 2) capital costs and associated debt service (financing costs); and 3) operations, maintenance, and replacement costs (OM&R). Preliminary agreements establishing major terms and conditions have been drafted with the City of Hammond and CDWM. As appropriate, terms and relevant water supply and access costs have been updated to reflect those agreements.

For the 60 MGD New Indiana Intake and CDWM alternatives, project costs will be split between regional participants. Capital costs are assumed to be distributed according to Maximum Day Demand. Based on demand projections, Joliet demand is assumed to be 48.5% of total Maximum Day Demand and therefore, Joliet is responsible for 48.5% of regional system project capital costs. Operations, Maintenance and Replacement (OM&R) costs are distributed according to Average Day Demand. Joliet's average day demand contributes 60% of the total projected Average Day Demand. Joliet is assumed to be responsible for 60% of regional system project OM&R costs. Once the project alternative has been selected and regional participants defined, the regional allocation of costs may be modified according to agreements between regional partners.

Reference: Joliet Alternative Water Source Program – Funding Strategy Memo

Water Purchase and Access Costs

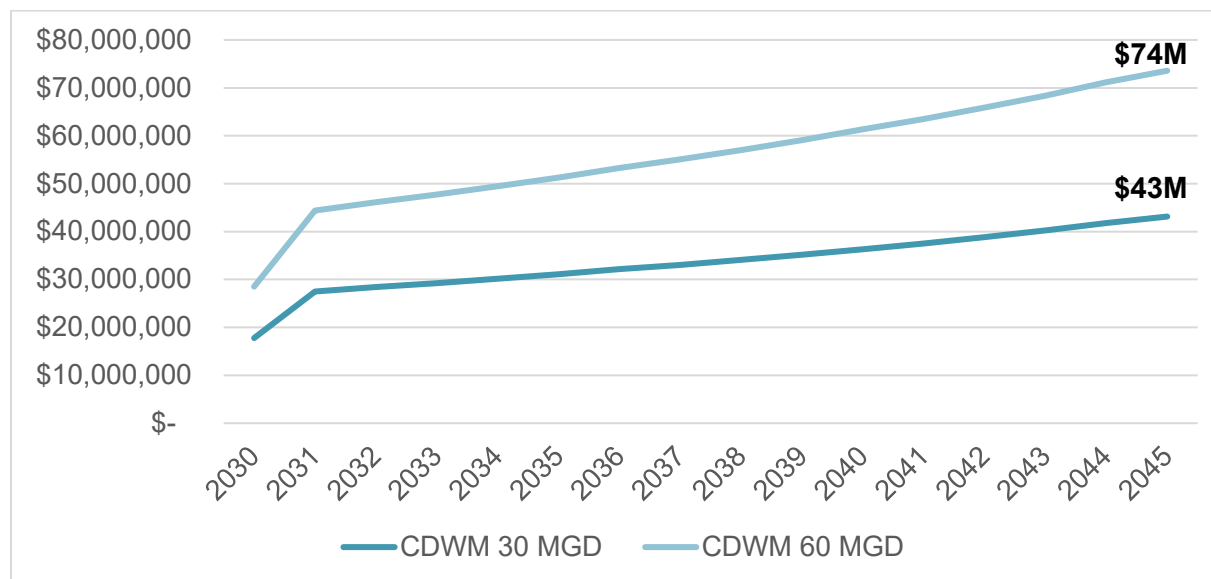
A primary difference between the CDWM and New Indiana Intake alternatives is the wholesale purchase of water from CDWM as opposed to developing a new intake, treatment, and transmission system for the New Indiana Intake alternatives. Water purchase costs for the CDWM alternative represent the ongoing costs of buying water from CDWM. CDWM wholesale water rates encompass all capital facilities and investment attributable to service to Joliet and Joliet's proportionate share of Chicago's operations and maintenance expenses. Analogous costs for the New Indiana Intake alternatives are reflected in capital/financing and OM&R costs. The access costs for the New Indiana Intake alternatives are the access charges that will compensate the City of Hammond for its efforts in connection with the project and the disruption that will be caused by the project.

New Indiana Intake access costs include \$8 million in upfront commitment and right-of-way (ROW) enhancement payments as well as annual easement fees, ROW charges, annual property tax payments and a volumetric charge based on average daily demand.

Water Purchase Costs

Figure 1 shows estimated annual water purchase costs for the CDWM 30 MGD and 60 MGD alternatives.

Figure 1 - Projected CDWM Alternatives Annual Water Purchase Costs 2030¹-2045



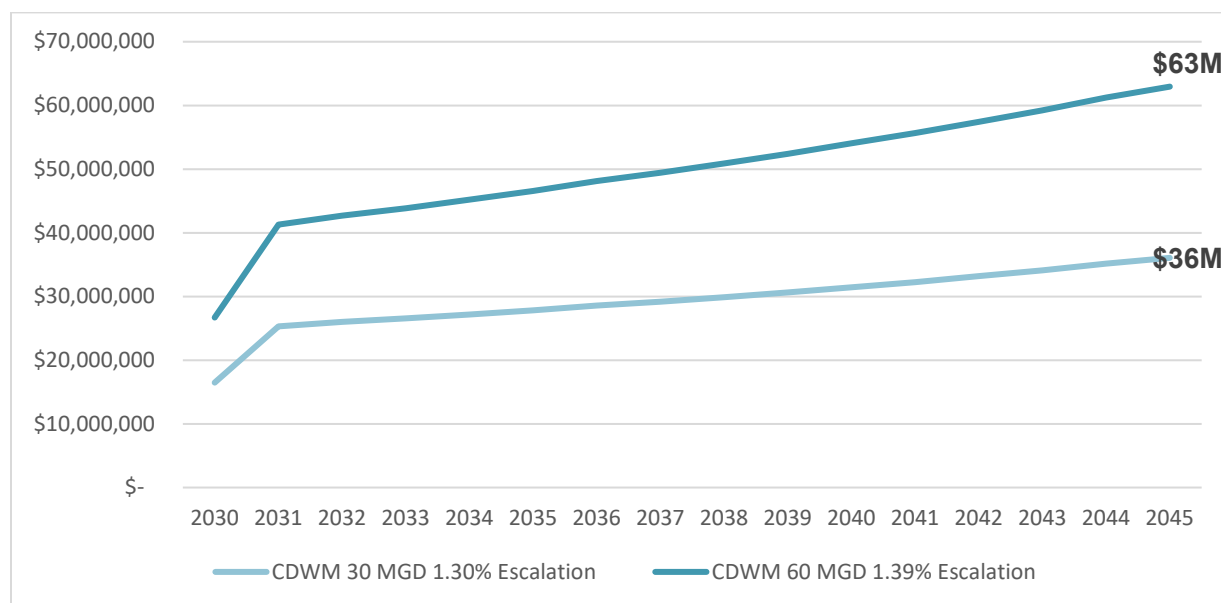
¹ Assumes only 8 months of purchased water in 2030

Reference: Joliet Alternative Water Source Program – Funding Strategy Memo

CDWM has proposed an annual review of Joliet’s rates and cost of service analysis. For Joliet, the annual cost of service review would result in a credit or debit being applied the following year to Joliet’s purchased water costs. If a regional water commission is established, the rate based on the cost of service would be charged to all commission members.

The estimated water purchase costs shown in Figure 1 assume a 2% rate escalation. Rate escalation will be based on the true cost of service. The rate is a function of capital facilities and investment attributable to service to Joliet and Joliet’s proportionate share of Chicago’s operations and maintenance expenses. Some of these rate components are exposed to escalation (i.e. OM&R) and some are not (i.e. debt service). Rate escalation would reflect the true increase in costs. CDWM has suggested 1.30% and 1.39% annual increases for the 30 MGD and 60 MGD water purchase rates, respectively but a 2% escalation has been assumed for this base case analysis. Figure 2 assumes annual water purchase costs for CDWM alternatives with 1.30% and 1.39% water purchase rate escalations.

Figure 2 - Projected CDWM Alternatives Annual Water Purchase Costs 2030-2045, 1.30% and 1.39% Wholesale Rate Increases for 30 MGD and 60 MGD Alternatives, Respectively



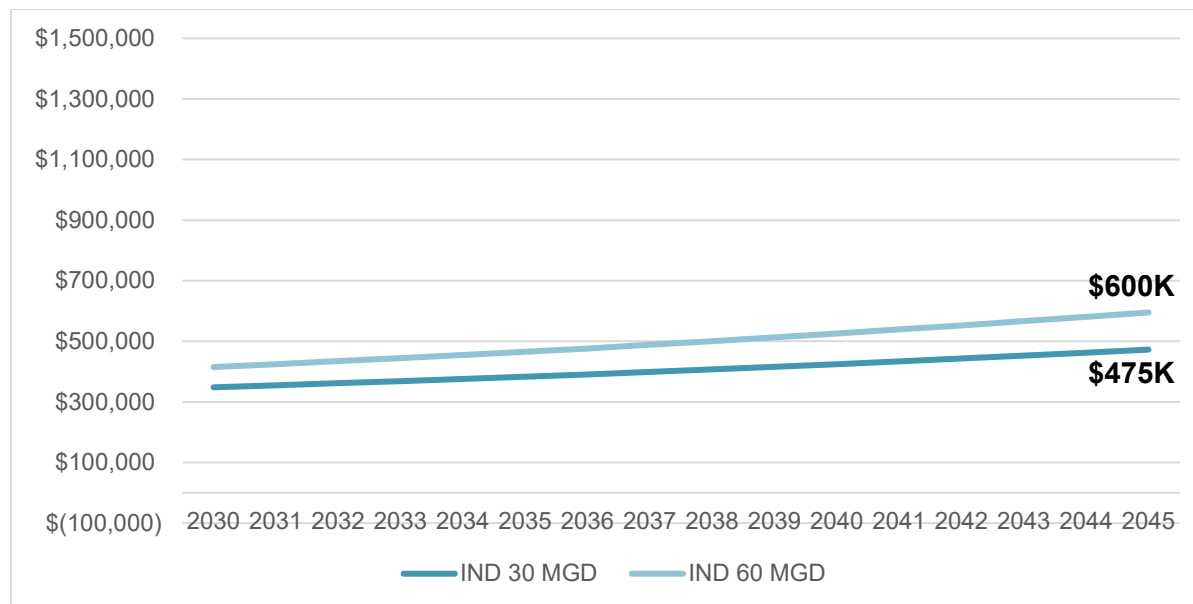
Access Costs

Figure 3 shows estimated annual Access Charges for the New Indiana Intake alternatives.

Figure 3 - Projected New Indiana Intake Alternatives Annual Access Costs 2030²-2045

² Assumes only 8 months of purchased water in 2030

Reference: Joliet Alternative Water Source Program – Funding Strategy Memo



Costs represented in Figure 3 assume ROW easement and volumetric charges will adjust consistent with changes in the Consumer Price Index (CPI). Other annual costs will remain constant. The base case escalation assumption for CPI is 2%.

Capital Costs

The City of Joliet will be responsible for the planning, design, financing and construction of new water supply/production infrastructure, new water transmission/delivery infrastructure, and distribution system improvements. The 60 MGD options for both the CDWM and New Indiana Intake alternatives include capital costs associated with the regional pipe network. Joliet will finance new infrastructure assets with a combination of government program loans and revenue bonds. Joliet will be responsible for 100% of the costs associated with the Joliet distribution system improvements but will share proportionately in all other costs. Capital cost responsibility for the 60 MGD regional system has been distributed according to Maximum Day Demand. Table 2 shows which cost components are attributable to the alternatives.

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Table 2 – Cost Components and Alternatives

	CDWM 30MGD	CDWM 60MGD	IND 30MGD	IND 60MGD
Charge for Access			✓	✓
Supplier Capital Improvement Cost	✓	✓		
Water Supply/ Production Infrastructure			✓	✓
Water Transmission/ Delivery Infrastructure	✓	✓	✓	✓
Water Commission Loop Improvements		✓		✓
Joliet Distribution System Improvements	✓	✓	✓	✓

Construction costs are assumed to escalate 3% annually. As presented in Table 3, the Engineering News Record (ENR) Construction Cost Index (CCI) supports the 3% construction escalation assumption.

Table 3 – U.S. Construction Cost Escalation³

ENR Construction Cost Index July 2020	
5-Year Average Annual Growth (2014-19):	2.84%
10-Year Average Annual Growth (2009-19):	2.79%
20-Year Average Annual Growth (1999-19):	3.16%
30-Year Average Annual Growth (1989-19):	3.02%

Capital costs are assumed to escalate to the time of construction. Updated capital cost estimates are presented in Table 3.

³ Source: ENR Construction Cost Index with US CPI, July 2020.

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Table 4 – 2020 Estimated Capital Costs and Capital Costs Escalated to Time of Construction

	CDWM 30 MGD	CDWM 60 MGD	CDWM 60 MGD Joliet Costs	IND 30 MGD	IND 60 MGD	IND 60 MGD Joliet Costs
2020 dollars	\$ 592,000,000	\$ 810,000,000	\$ 430,000,000	\$ 1,028,000,000	\$ 1,368,000,000	\$ 704,000,000
Escalated to time of construction	\$ 725,000,000	\$ 993,000,000	\$ 528,000,000	\$ 1,258,000,000	\$ 1,676,000,000	\$ 859,000,000

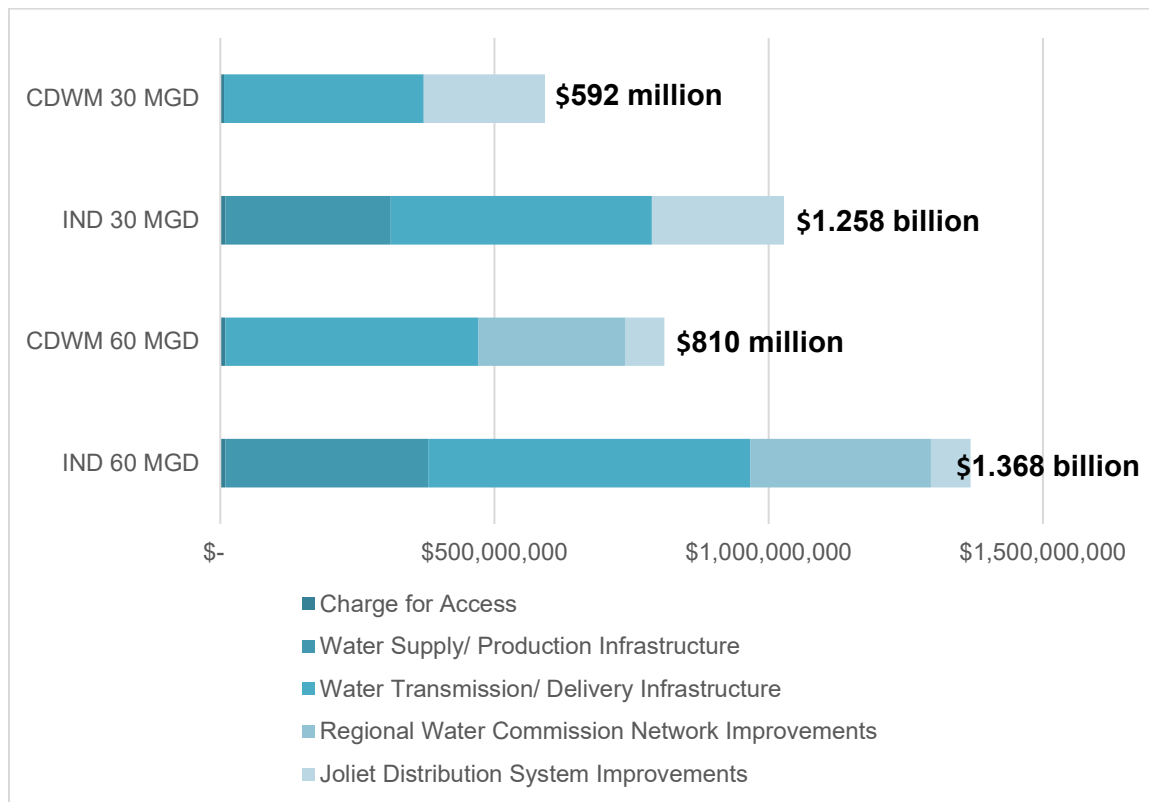
Over 90% of project capital costs are expected to be incurred during project construction, between 2025-2029.

In addition to the new water supply project, the City of Joliet has other capital improvement projects planned, including investments in non-revenue water (NRW) reduction. As a condition of receiving a Lake Michigan Allocation Permit, the City has committed to replacing 1.6% of the watermain in the Joliet system each year. This commitment requires a yearly investment of \$16.4 million starting in 2022. This amount is \$6.4 million more than the cost of the City's current watermain replacement program and has an impact on Joliet cash reserves and debt service coverage. While NRW costs are minor compared to the alternative water source program, they are accounted for in Joliet's projected rate increases and debt service.

Opinions of Probable Construction Cost (OPCCs) developed for the 2020 Evaluation are considered to be Class 4 estimates that include project specific contingencies in the range of 20% - 25%. Updated capital cost estimates for the four alternatives are provided in Figure 4.

Reference: Joliet Alternative Water Source Program – Funding Strategy Memo

Figure 4 – Capital Costs for the CDWM and New Indiana Intake Alternatives⁴

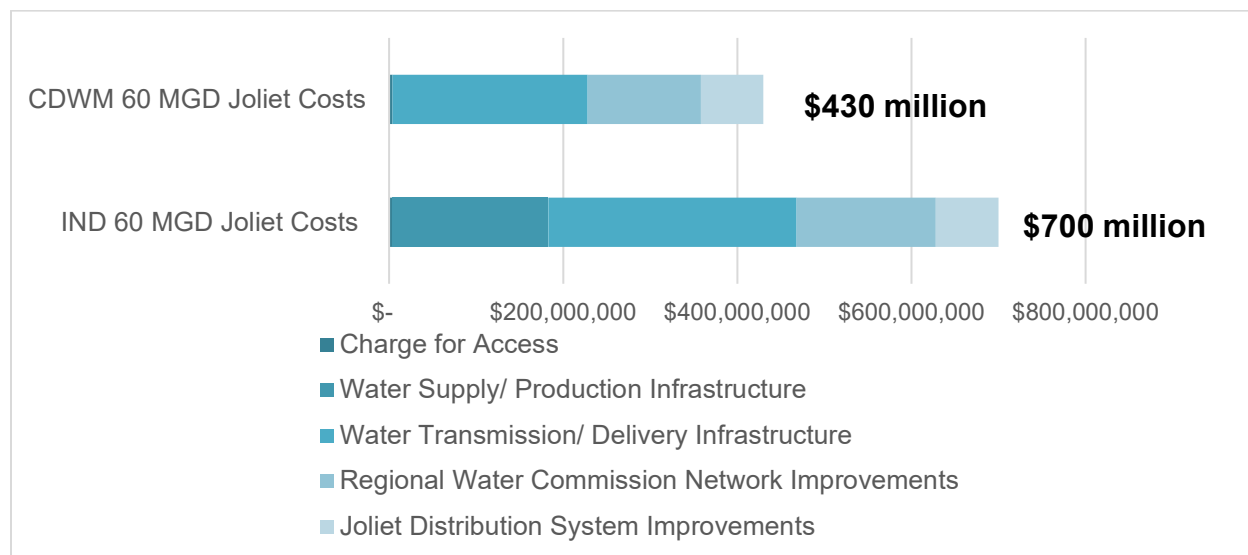


Capital cost responsibility for the 60 MGD regional system is assumed to be split between regional participants according to Maximum Day Demand. Joliet distribution system improvements only serve City of Joliet water customers and are therefore solely Joliet's responsibility. Figure 5 shows Joliet's portion of the 60 MGD New Indiana Intake and CDWM capital costs.

⁴ Costs are in 2020 dollars. Costs in Figure 1 are not escalated to time of construction.

Reference: Joliet Alternative Water Source Program – Funding Strategy Memo

Figure 5 - Joliet Capital Costs for 60 MGD Regional System Alternatives



Refined estimates and discussions with the City of Hammond and CDWM highlight key sensitivities and risks. From a financial perspective, one key difference between the New Indiana Intake and the CDWM alternatives is the timing of cost impacts. The more capital-intensive New Indiana Intake will require more debt to fund the project. While increases in interest rates and construction costs would increase costs for all alternatives, those increases would have a more pronounced impact on the total cost of the New Indiana Intake alternatives than the CDWM alternatives.

Operations, Maintenance & Replacement Costs (OM&R)

Joliet will have OM&R responsibility for new Joliet infrastructure. OM&R responsibility for regional infrastructure will be shared based on proportional share of total Average Day Demand. For the CDWM alternative options, OM&R costs for CDWM existing and new infrastructure providing water service to Joliet will be included in the CDWM purchased water rate and therefore, not included in the OM&R cost estimates developed by Joliet. For all alternatives, Joliet is expected to realize a reduction in OM&R costs associated with no longer having to operate existing wells and treatment infrastructure. These reductions are accounted for in cost estimates for the 30 MGD and the 60 MGD alternatives.⁵ According to updated estimates, the New Indiana Intake alternatives have higher OM&R costs. OM&R costs are expected to escalate over time, growing to more than \$50 million annually by 2079 for the 60 MGD New Indiana Intake alternative. Table 5 summarizes 2030 OM&R costs for alternatives.

⁵ OM&R estimates in Table 5 are net of Alternative Water Source Program OM&R costs and reductions in Joliet OM&R costs related to existing water infrastructure.

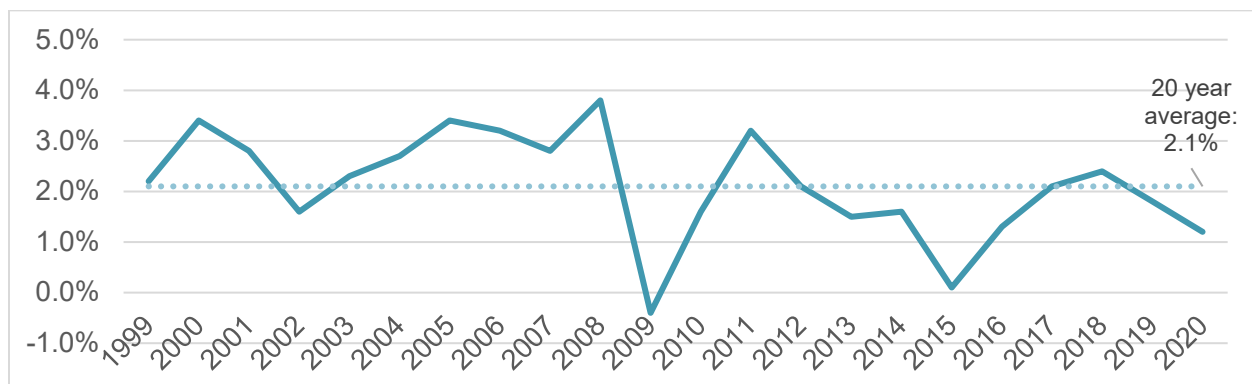
Reference: Joliet Alternative Water Source Program – Funding Strategy Memo

Table 5: Estimated 2030 OM&R Costs for CDWM and New Indiana Intake Alternatives

Alternative	Operations, Maintenance and Replacement Costs (2030)
CDWM 30 MGD	\$700,000
Indiana 30 MGD	\$10,300,000
CDWM 60 MGD	\$2,900,000
Indiana 60 MGD	\$14,200,000
CDWM 60 MGD (Joliet share)	\$300,000
Indiana 60 MGD (Joliet share)	\$7,100,000

OM&R costs are also expected to escalate according to CPI over the life of the project. Figure 6 shows the CPI annual average over the past twenty years and was developed from US Department of Labor Bureau of Labor Statistic data.

Figure 6 – Historic CPI Escalation; Annual Average



For a regional system (60 MGD alternatives), OM&R costs are assumed to be split among regional participants according to Average Day Demand.

Funding Strategy

The City of Joliet intends to secure capital from multiple sources to fund new water source infrastructure. Water Infrastructure Finance and Innovation Act (WIFIA), Illinois Environmental Protection Agency (IEPA) Public Water Supply Loan Program (PWSLP) state revolving funds (SRF), and municipal bonds are currently the assumed sources of funding. Because the WIFIA and SRF loan programs offer the most attractive financing terms, it is assumed all alternatives will secure as much capital as possible through these programs and utilize revenue bonds to fill any funding gaps.⁶ Table 5 shows funding assumed from WIFIA, SRF, and revenue bonds.

⁶ Between 2020 and 2025, additional funding alternatives with more attractive terms may emerge. The SRF and WIFIA programs may receive additional capitalization from the federal government. The federal government may direct funding to water infrastructure projects to stimulate economic recovery from the COVID-19 pandemic. The funding strategy presented in this memo is based on currently available information.

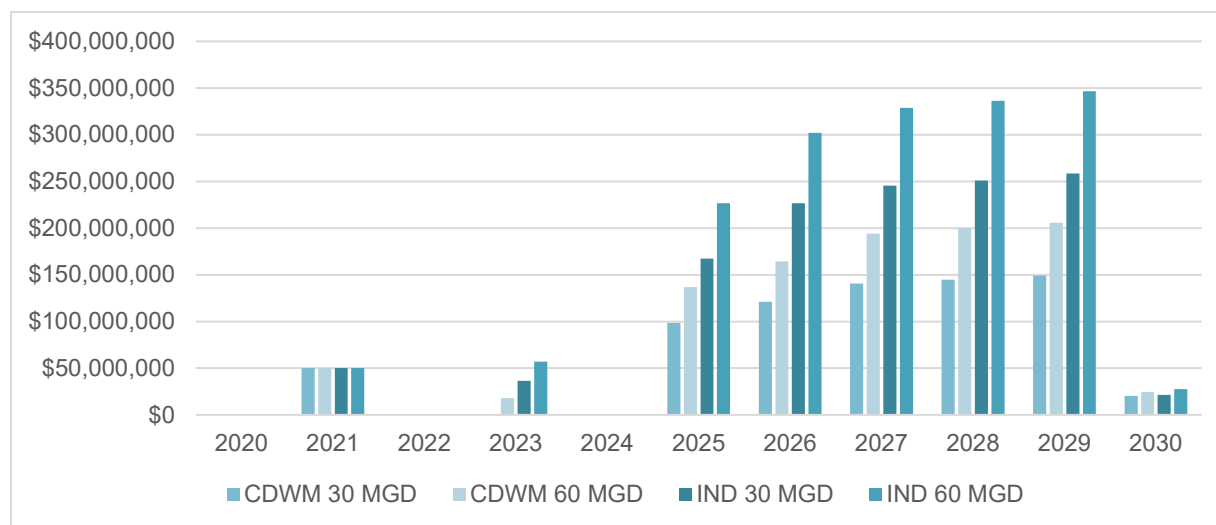
Reference: Joliet Alternative Water Source Program – Funding Strategy Memo

Table 6 – Assumed Funding Sources for Alternatives

Funding Source	CDWM 30 MGD	CDWM 60 MGD	Indiana Intake 30 MGD	Indiana Intake 60 MGD	
WIFIA	\$355,000,000	\$487,000,000	\$616,000,000	\$821,000,000	
IEPA SRF	\$250,000,000	\$250,000,000	\$250,000,000	\$250,000,000	
Revenue Bonds	\$120,000,000	\$256,000,000	\$391,000,000	\$604,000,000	
TOTAL⁷	\$725,000,000	\$993,000,000	\$1,257,000,000	\$1,675,000,000	

Currently, five (5) years of \$50 million in SRF funds between 2025 – 2029 is assumed. WIFIA loan draw-downs are modeled to occur in 2025, 2026, 2027 and 2028. Bonds are assumed to be issued in 2021, 2023⁸, 2028, 2029 and 2030 to meet capital needs. Figure 6 shows assumed issuances, less issuance and debt reserve funding, for each of the alternatives during project development and construction. Opportunities may arise during project development and construction to optimize debt issuance. The timing and amount of financing will likely vary somewhat from what is presented in Figure 7.

Figure 7 – Project Development and Construction Capital Needs



Research on available funding sources has been conducted throughout 2020 to test assumptions and revise the funding strategy. This has included conversations with funding program administrators, municipal financial advisors, rate consultants, and other municipalities. In addition to the funding sources outlined above, Joliet evaluated the applicability of a public private partnership (P3) for project financing and development. The anticipated higher financing costs, challenges related to garnering P3 support from stakeholders, and the associated surrender of project control informed the decision to not pursue a P3 funding strategy.

⁷ Totals are capital required for project costs and do not include issuance and debt service reserve costs. While those costs are not shown in this table, they were included in the rate impact and total cost of water analyses.

⁸ No 2023 revenue bond issuance is assumed for the 30 MGD CDWM alternative

Reference: Joliet Alternative Water Source Program – Funding Strategy Memo

The amount of debt necessary to finance the water supply project is very high for all alternatives. In terms of credit and the potential impact on the City's bond rating; the project debt would be considered very high in terms of metrics used by rating agencies. The more debt the City issues, the worse its outstanding long-term debt-per-customer and debt-to-operating revenues would appear compared to industry standards. However, metrics on outstanding debt are only one factor that is considered when analyzing a rating for a water enterprise. The rating agency will also consider the service area, asset condition, system size, debt service coverage, liquidity, rate management, capital planning, and legal covenants. Given that each alternative will produce debt statistics which will be considered very high, it's likely the rating agency will look at the overall affordability of the project, the projected rates required, how those rates compare to the region, and whether there is room in the rate for additional increases to support capital needs beyond the water source project.

Another important factor to consider is the regional nature of the project and the likely issuance of debt by a regional water commission rather than the City. With the debt for the project issued by a water commission, the City would be responsible for debt and operating costs through a water supply contract and its cost of purchased water from the commission. The City's ability to incur additional direct debt for improvements to its own water and sewer system would then be dependent on the revenues it generates over and above its water purchase and Joliet-specific operational costs, in order to produce debt service coverage. Whether the Water Commission's charge to the City and its other members is made up of a greater debt service cost in the case of the Indiana option, or a greater water supply cost in the case of a Chicago option; it is still a water supply cost to the City and the other members/customers. For these reasons, a 60 MGD New Indiana Intake or CDWM alternative reduces the potential negative credit rating impact of water supply project debt issuance on the City of Joliet.

Generally Applied Financial Management Assumptions

- ***Debt Service Coverage Ratio (DSCR)***

Revenues must be sufficient to meet the cash requirements for OM&R expenses, debt service requirements, debt service coverage requirements, and reserves. A minimum composite debt service coverage ratio requirement of 1.15x has been assumed to be adequate for all alternatives' project debt.

A longer-term effect of maintaining strong debt service coverage is that Joliet accumulates cash reserves. Several years after substantial completion, there may be an opportunity to apply excess cash reserves to reduce outstanding debt and associated debt service. Currently, no assumptions of debt prepayment have been made.

- ***Cash Reserves***

Joliet assumes a minimum 180 days (a half year) of operating reserves. Reserves are maintained to address cash-flow needs and the lag between expenses incurred and revenues received. Water purchase costs associated with the CDWM alternatives and higher OM&R costs associated with the New Indiana Intake alternatives directly impact the amount of operating reserves necessary to meet reserve requirements and increase revenue requirements proportionally.

Reference: Joliet Alternative Water Source Program – Funding Strategy Memo

- *Issuance Costs*

Each alternative assumes costs associated with the underwriting and issuance of debt. For all alternatives, a one-time \$500,000 WIFIA issuance cost and \$25,000 per SRF issuance in years 2025-2029 are assumed. Additionally, a reserve of one year of principal and interest is included in bond proceeds as well as an issuance cost equal to 1.5% of total revenue bond proceeds for bonds issued in 2021, 2023, 2028, 2029 and 2030.

- *Repayment*

Generally, debt service costs are realized during project development and construction as debt is issued and after substantial completion until full repayment. Deferral of WIFIA repayment during the early years of the project is described below in *Funding Source Assumptions: WIFIA*. Once debt is repaid in full, project costs drop significantly. The base financial model assumes debt will be amortized according to loan maturity with no prepayment or sculpting of loan payments in later years. Once an alternative has been selected and as funds are needed and debt is issued, Joliet will work with its municipal financial advisor (MFA) to explore opportunities for Joliet to optimize debt structuring and repayment and assumptions will be updated accordingly.

Funding Source Assumptions

WIFIA

The WIFIA program is administered by the United States Environmental Protection Agency (USEPA) out of the Washington DC headquarters. Annually, the program is appropriated funds by Congress. WIFIA loans can cover up to 49% of total project costs.

In 2019, Joliet submitted a WIFIA Letter of Interest (LOI) requesting a \$294 million WIFIA loan for the new water source program and was selected to apply. In 2020, Joliet submitted a supplemental WIFIA LOI requesting an additional \$420 million in WIFIA loans. If Joliet's 2020 WIFIA LOI is selected and Joliet is able to submit a complete WIFIA application, Joliet will be eligible to receive approximately \$714 million in WIFIA loans. If Joliet is not selected to apply for the additional \$420 million in WIFIA loans, Joliet may still apply for a \$294 million WIFIA loan or submit additional LOIs in future years.

WIFIA administrators have recently executed Master Credit Agreements with WIFIA borrowers. A Master Credit Agreement enables WIFIA to support projects with longer construction periods. Under a Master Credit Agreement, WIFIA can issue multiple loans to borrowers through an expedited application and credit negotiation process. Under a Master Credit Agreement, Joliet assumes WIFIA can fund up to 49% of project costs even if 49% exceeds the \$714 million requested to-date.

Joliet has led project development and funding analysis for the regional system alternatives. However, if a regional system alternative is selected, the project will most likely be advanced and financed through a regional water commission. In LOIs submitted to WIFIA and most discussions with WIFIA administrators, the City of Joliet has been put

Reference: Joliet Alternative Water Source Program – Funding Strategy Memo

forward as the prospective borrower. To utilize WIFIA funding for a commission-led regional system, Joliet will work with the commission to establish the commission as the prospective WIFIA borrower. It will be critical to demonstrate to WIFIA underwriters the loan repayment capability of the commission through water supply contracts. Additionally, the commission and Joliet will need to show the WIFIA technical team the technical feasibility of the selected alternative by submitting 30% design documents by the end of 2021. WIFIA has already shown their support for the project by selecting Joliet's 2019 LOI. The regional aspect of the project and the acute need to create a new, viable water supply are well-aligned with WIFIA objectives. For these reasons, it is assumed WIFIA will support a commission-led regional project.

The WIFIA interest rate is tied to State and Local Government Series (SLGS) securities. SLGS interest rates tend to be close to Treasury rates of a similar maturity. Interest rates are fixed at the time of loan closing though WIFIA loans can be refinanced and several borrowers have acted on this option in 2020. While interest rates are currently near historic lows - the November 6, 2020 30-year SLGS rate was 1.56% - a more conservative 3% WIFIA interest has been assumed in this analysis.

One attractive feature of WIFIA is a single interest rate, locked at loan closing. Joliet can execute a low-interest WIFIA loan in 2022 and not fully expend the available credit for several years. Also, if interest rates drop, Joliet can refinance the WIFIA loan.

WIFIA loan maturity is assumed to be thirty-five (35) years after substantial completion. Because WIFIA is expected to be applied in the early years of project construction, the weighted average life of the loan is longer than 35 years. Current analysis assumes a first drawdown of WIFIA funds in 2025, though a WIFIA loan is assumed to be executed mid-2022. There are no WIFIA prepayment penalties and there may be opportunities to prepay, but it is currently assumed the WIFIA loan will be paid off over 35 years.

WIFIA offers flexible repayment terms with an interest and principal deferral of up to five (5) years after substantial completion. Deferral provides more time for a borrower to build rate revenues through rate increases or other revenue sources to adequately cover debt service. To keep annual customer rate increases lower, a five (5) year deferral of WIFIA principal and interest payments has been assumed.

In this analysis, WIFIA drawdowns between 2025-2029 are expected to occur throughout the year. Interest is accrued on WIFIA disbursements. The assumed deferral of repayment results in capitalized interest on WIFIA principal outstanding 2025 – 2034. While deferral allows for lower rate increases over a longer period of time, principal grows considerably during those years. The tradeoff of the deferred repayment is larger debt payments over the life of the loan.

Though the base case assumption remains WIFIA repayment deferral for five (5) years after substantial completion, models were run with alternative repayment schedules. Payment of WIFIA interest 2030-2035 is a possible strategy for mitigating early years' rate impacts of financing while reducing the amount of capitalized interest on WIFIA loans.

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SRF

The Illinois SRF (State Revolving Fund) Public Water Supply Loan Program is managed by the Illinois Environmental Protection Agency (IEPA). The City of Joliet is currently repaying multiple SRF loans and has a relationship with IEPA administrators. In October 2020, Joliet met with IEPA to discuss assumptions for SRF funding for the Alternative Water Supply Program. IEPA SRF Administrators indicated \$250 million can be assumed to be allocated to SRF for water projects each year, into the indefinite future. IEPA will not apply more than 25% of the total amount available to any one applicant (\$62.5 million). With this guidance, \$50 million of SRF loans per year for five (5) years, totaling \$250 million, is assumed in the funding strategy for each alternative.

IEPA encourages the consolidation and/or regionalization of public water systems to take advantage of economies of scale available to larger water systems. For this reason, it is assumed IEPA will support both a 30 MGD Joliet-led water supply project or a 60 MGD commission-led regional water system.

SRF interest rates are established annually in July. In 2020, the IEPA SRF interest rates were set at 1.39%. Typically, the IEPA SRF rates are below market rates. A 1.5% interest rate is assumed for the IEPA SRF. For SRF, 1.5% is not conservative. However, conservative interest rate assumptions have been made for WIFIA loans and revenue bonds based on current interest rates. With 1.5% SRF loans, a roughly 3% weighted average cost of capital (WACC) for the project seems appropriate. Additionally, a 20-year maturity is assumed for all five (5) IEPA loans. The IEPA loan repayment period has historically not exceeded 20 years but IEPA could increase the term of SRF loans between now and 2025. Longer duration SRF loans could result in lower annual debt service than what is currently assumed.⁹

Revenue Bonds

The City can originate tax-exempt bonds to fund essential services infrastructure projects and has broad discretion to issue these bonds. Municipal bonds are not dependent on government program administrators' application or approval processes. For these reasons, it is assumed revenue bonds will be used to fill capital funding gaps during project development and construction. Interest rates on these bonds are primarily a function of the City's credit rating. The credit rating takes into consideration bond-related revenues; existing and anticipated debt and other liabilities (i.e. pensions and post-employment benefits); and management. Currently the City enjoys a strong credit rating.

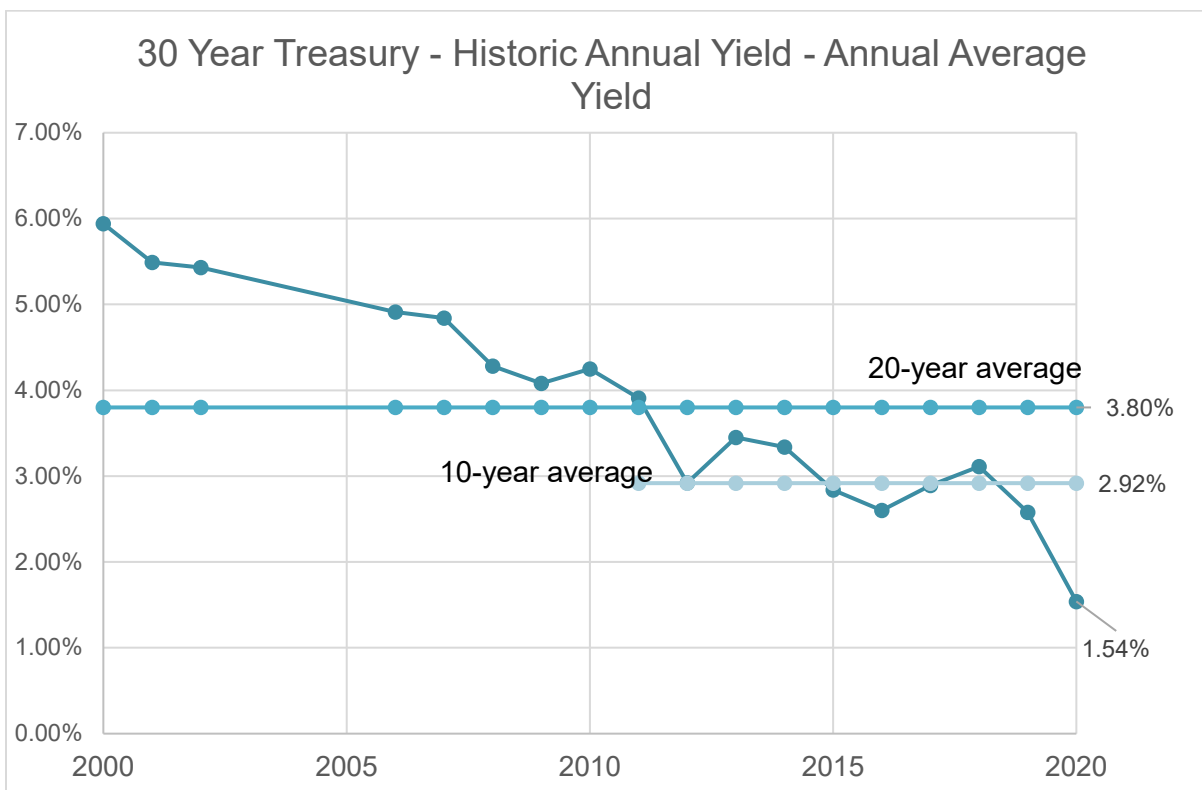
The majority of municipal bonds used to finance water, sewer, and solid waste infrastructure in the US are revenue bonds. Revenue bonds are bonds where the revenue generated through the operation of the project being financed, or from other non-property tax sources, pays the debt service. Water supply projects, providing essential services, are recognized as low risk and typically receive lower bond interest

⁹ Many other state Drinking Water SRF programs offer loans with longer maturities than 20 years. Recently, there have been discussions at the IEPA regarding increasing SRF loan maturities to 30 years.

Reference: Joliet Alternative Water Source Program – Funding Strategy Memo

rates. However, even with a strong credit rating, revenue bonds would have higher interest rates than WIFIA loans. Considering interest rate trends over the past twenty years, a 4% revenue bond interest rate is assumed for all revenue bonds issued to support the project. 4% is conservative in 2020 but reflects the possibility of rate increases in coming years. Figure 8 shows historic annual yields for the 30-year Treasury bonds.

Figure 8 - 30 Year Treasury - Historical Annual Yield - Annual Average Yield

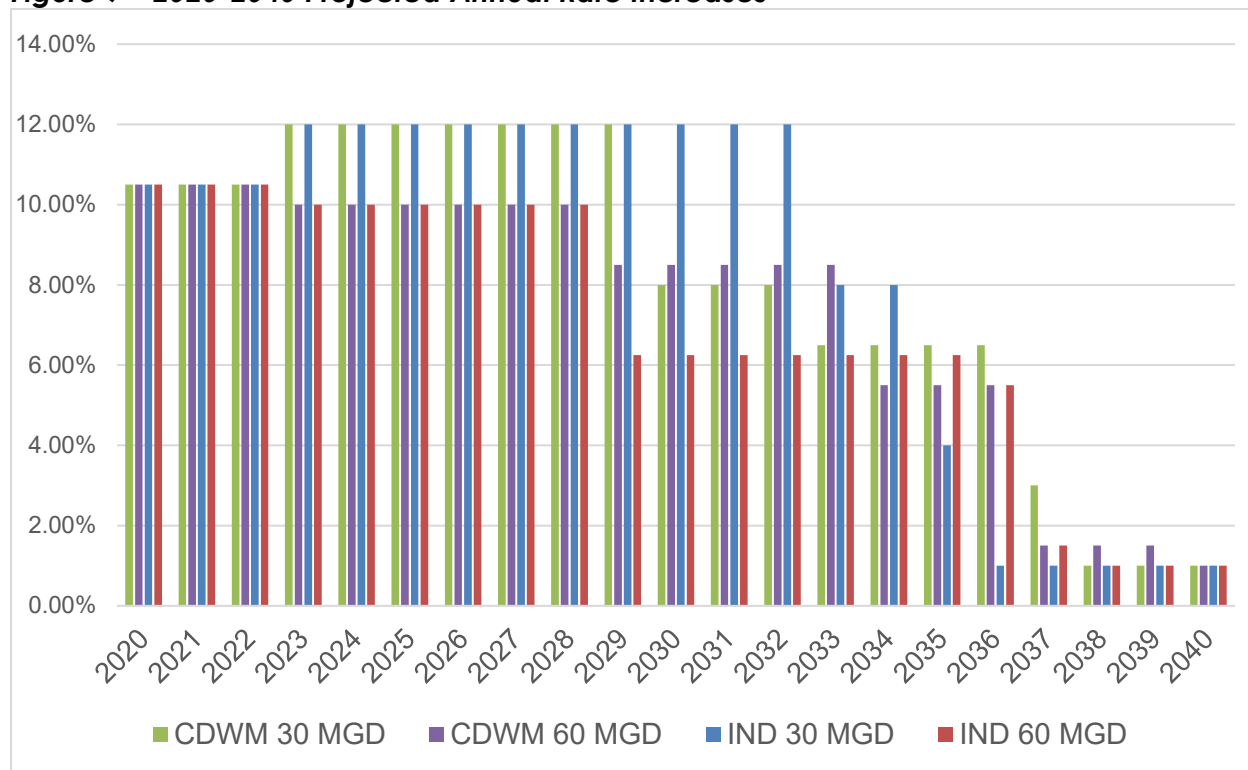


Impact on Monthly Water Rates

Water rate revenues are assumed to generate adequate funds to cover project costs. Joliet assumes levelized rate increases to meet project funding and debt service requirements in addition to cash reserve and debt service coverage levels. Implementation of more gradual rate increases is generally preferable to large one-time, or “just-in-time”, rate adjustments. Figure 9 illustrates assumed rate increases for the period 2020-2040.

Reference: Joliet Alternative Water Source Program – Funding Strategy Memo

Figure 9 – 2020-2040 Projected Annual Rate Increases

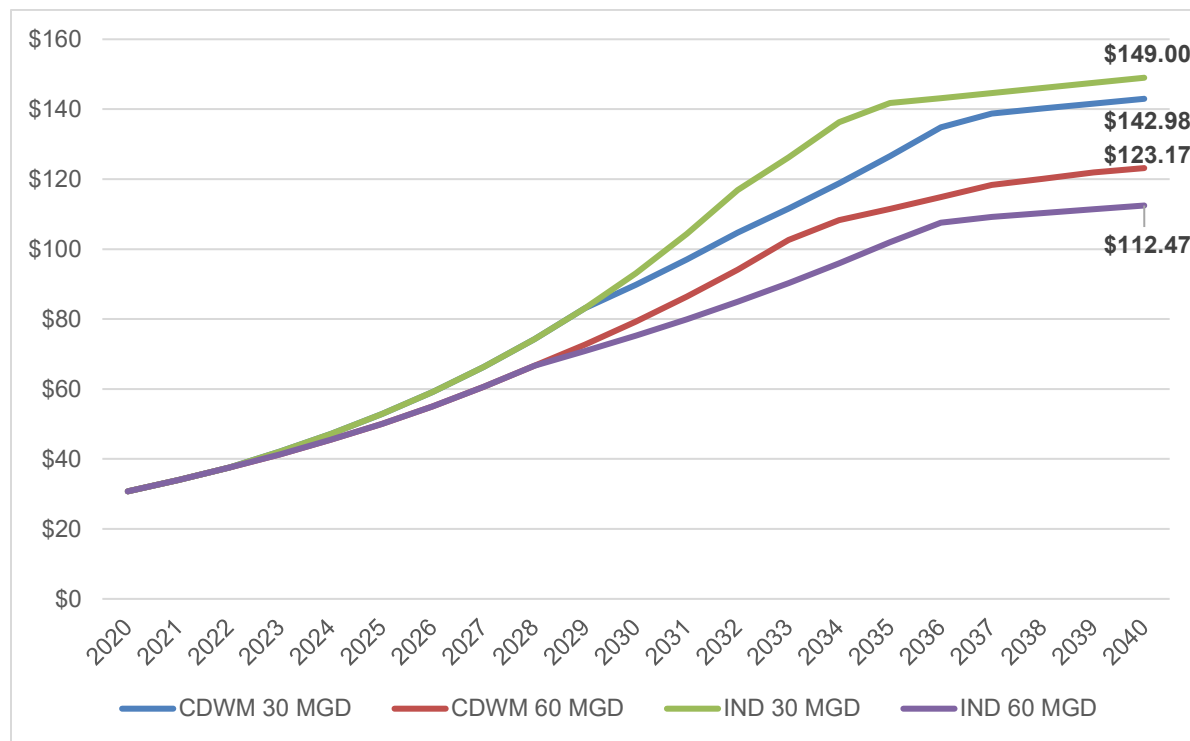


While other Joliet water capital costs contribute to rate increases, investments in and costs associated with the new water supply system are the primary drivers for rate increases.

Long-term rate increases assume stable funding requirements after completion of the water supply project. In this rate analysis, demand growth coupled with rate increases are projected to build adequate cash balances and debt coverage to significantly reduce the need for rate increases in the late 2030s. However, rate increases beyond 2035 may vary based on operating and capital needs as they are better understood over time. Figure 10 shows the projected monthly water bill cost impact for the CDWM and New Indiana Intake 30 MGD and 60 MGD alternatives. These rate increases include new water system project costs and Joliet's necessary investment in its existing water system.

Reference: Joliet Alternative Water Source Program – Funding Strategy Memo

Figure 10 - Monthly Water Cost Impact¹⁰



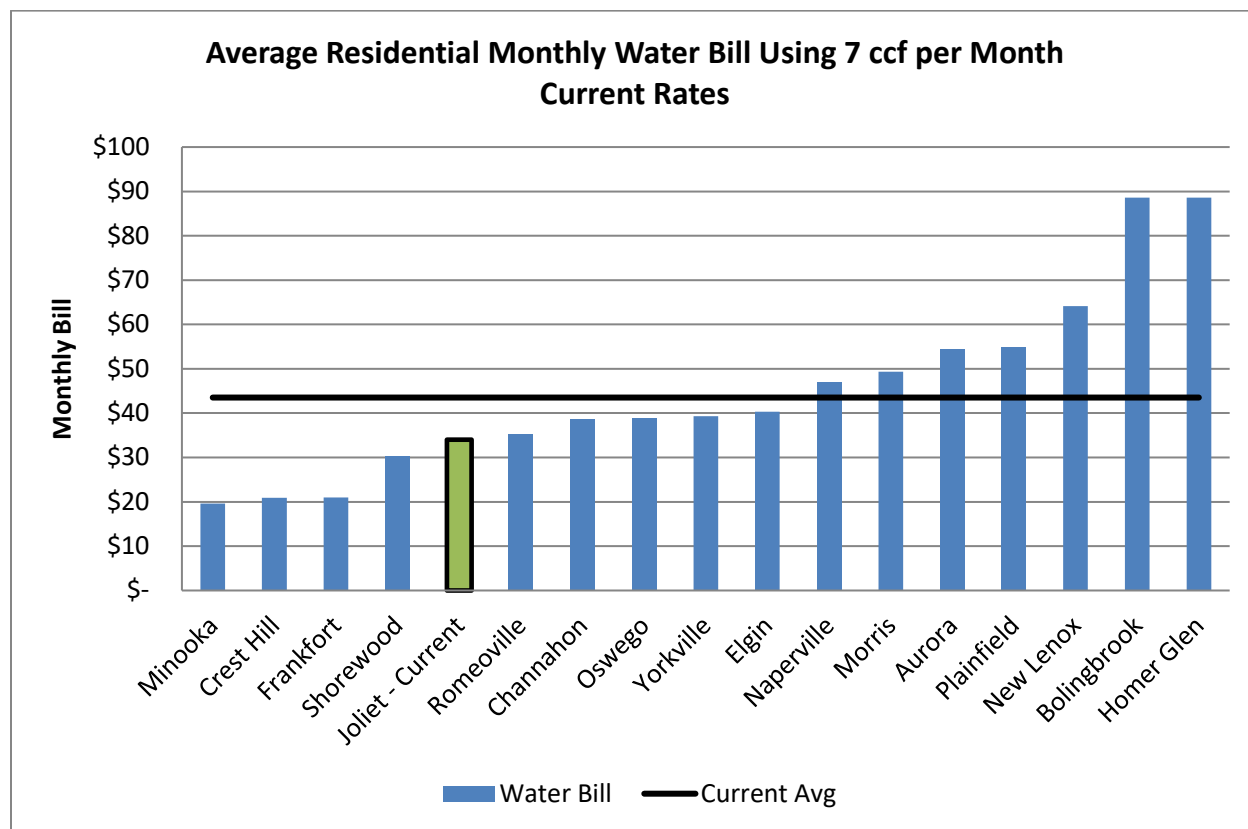
Today, Joliet water rates are low compared to other utilities in the region. According to projects, Joliet water rates are estimated to more than triple by 2040. Increases are a product of necessary investment in existing system infrastructure and a new, viable water system. The American Water Works Association 2019 Water and Wastewater Rate Survey of over 230 US water utilities found that, on average, between 1996 and 2018, water charges increased 5.09% annually for water. With 5% increases per year going forward, the 2040 average monthly water bill would be by \$115.45.

Water affordability may be a concern for Joliet residents and is discussed in greater detail later in this memo. Figure 11 provides a current comparison of regional water bills.

¹⁰ The graph shows a projection of the average Joliet monthly water bill and assumes 7 ccf per month. This bill does not include sewer or trash.

Reference: Joliet Alternative Water Source Program – Funding Strategy Memo

Figure 11 - Joliet Regional Water Rate Comparison



50-Year Total Cost of Water

The Total Cost of Water calculates the present value of costs realized over the 50-year life of the project, assuming a 3% discount rate.

A discount rate of 3% has been assumed to calculate the present value of future costs, or the “Total Cost of Water”. The 3% discount rate is based on the presumed cost of borrowing money. For the four alternatives, the average weighted average cost of capital (WACC) is 2.92%, rounded to 3% for simplicity. With less revenue bond funding - assumed to have the highest interest rate - the WACC for the CDWM alternatives is lower (2.7% and 2.9% for the 30 MGD and 60 MGD alternatives, respectively) and higher for the New Indiana Intake alternatives (3.0% and 3.15% for the 30 MGD and 60 MGD alternatives, respectively).

Figure 12 and Table 7 show the 50-year Total Cost of Water for each of the alternatives over the life of the project.

Reference: Joliet Alternative Water Source Program – Funding Strategy Memo

Figure 12 - Total Cost of Water for CDWM and New Indiana Intake Alternatives

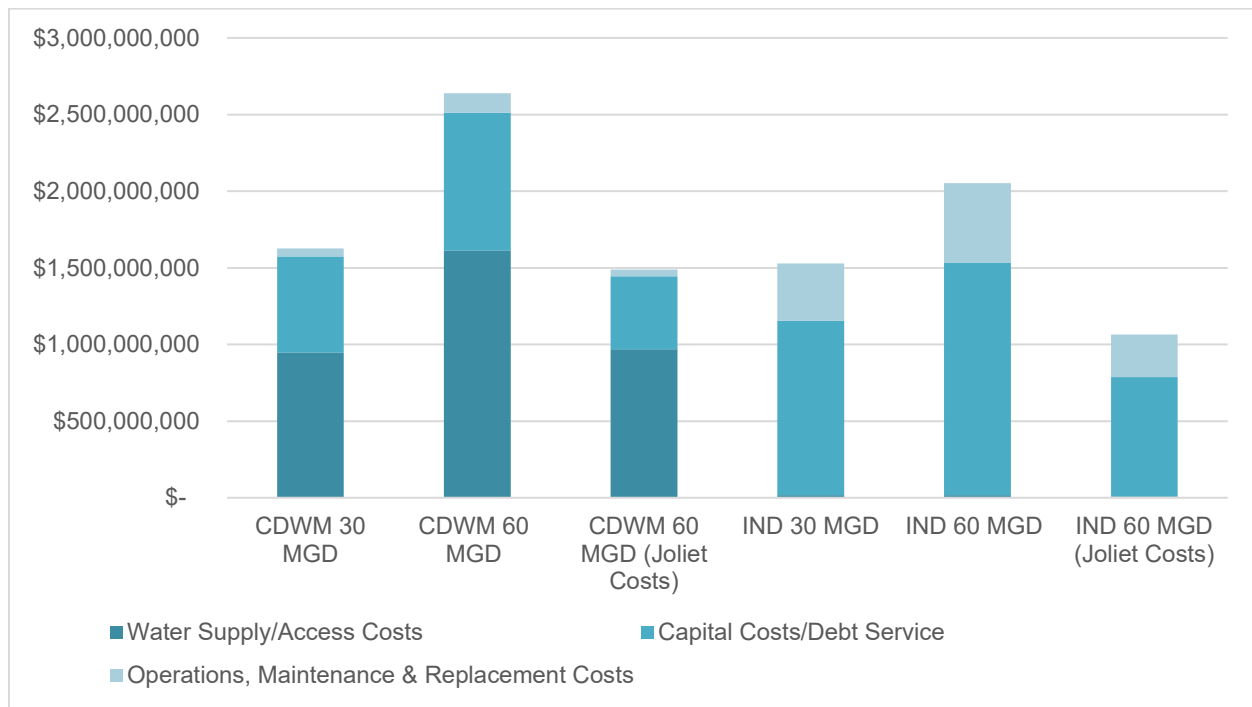


Table 7 - Total Cost of Water for CDWM and New Indiana Intake Alternatives

Total Cost of Water (\$M)	CDWM 30 MGD	CDWM 60 MGD	CDWM 60 MGD (Joliet Costs)	IND 30 MGD	IND 60 MGD	IND 60 MGD (Joliet Costs)
Water Supply/Access Costs	\$ 949	\$ 1,615	\$ 969	\$ 17	\$ 17	\$ 9
Capital Costs/Debt Service	\$ 626	\$ 896	\$ 476	\$ 1,137	\$ 1,517	\$ 778
OM&R Costs	\$ 52	\$ 128	\$ 43	\$ 375	\$ 518	\$ 278
Total	\$ 1,627	\$ 2,639	\$ 1,488	\$ 1,529	\$ 2,052	\$ 1,065

Reference: Joliet Alternative Water Source Program – Funding Strategy Memo

Alternative Revenue Sources

Rate revenues are assumed to be the source of revenue to fund the planning, design, construction, and OM&R of the new water system. Alternative sources of revenue, such as sales tax or property tax revenues, have been discussed as a potential future source to meet project revenue requirements. DuPage Water Commission used a sales tax to fund construction of its water system. In Illinois, a municipality or county may impose a home rule sales tax. An ordinance or resolution is required to establish the tax or to change or discontinue the tax rate. Property taxes levied by Illinois home rule municipalities, like Joliet, do not require approval of a referendum submitted to voters.

Table 8 presents home rule sales tax information compiled from the State of Illinois Department of Revenue (DOR) as of October 5, 2020. Compared to neighboring cities and villages, Joliet's current sales tax rate is on the higher end. In total, Joliet's sales taxes generated approximately \$26.5 million. According to DOR information, a 0.5% sales tax increase might result in \$7.5 million. However, Joliet's sales tax would be the highest in the area with a 0.5% sales tax increase and the increase might discourage shoppers from coming to Joliet. And while sales tax revenue would reduce the required rate revenue to meet annual project costs, \$7.5 million makes up less than 20% of total debt service between 2035 and 2042 for even the least capital cost alternative.

Table 8 – Home Rule Sales Tax Comparison

City	Total Sales Tax Rate	Home Rule Tax/Non -HR Sales Tax Rate	2019 Calendar Year Home Rule/Non-HR Sale Taxes	Value of 0.25% HR/NHR Sales Tax in 2019
City of Joliet (Will county)	8.75%	1.75%	\$26,262,746	\$3,751,821
City of Joliet (Kendall County)	9.00%	1.75%	\$200,584	\$28,655
Village of Bolingbrook (Will County)	8.50%	1.50%	\$17,347,359	\$2,891,227
Village of Plainfield (Will County)	8.50%	1.50%	\$5,588,845	\$931,474
City of Naperville (Will County)	7.75%	0.75%	\$1,214,141	\$404,714
Village of Romeoville	8.50%	1.50%	\$8,002,330	\$1,333,722
Village of New Lenox	9.00%	2.00%	\$8,378,264	\$1,047,283
City of Lockport	8.00%	1.00%	\$1,938,859	\$484,715
Village of Frankfort (Will County)	8.00%	1.00%	\$1,480,649	\$370,162
Village of Mokena	7.50%	0.50%	\$2,625,391	\$1,312,695
Village of Homer Glen	8.00%	1.00%	\$2,767,694	\$691,923
Village of Shorewood	8.75%	1.75%	\$4,923,089	\$703,298
City of Crest Hill	8.00%	1.00%	\$1,777,688	\$444,422
Village of Crete	7.50%	0.50%	\$332,169	\$166,084
City of Aurora (Will County)	8.25%	1.25%	\$204,360	\$40,872
Village of Channahon (Will County)	8.00%	1.00%	\$704,245	\$176,061

Reference: Joliet Alternative Water Source Program – Funding Strategy Memo

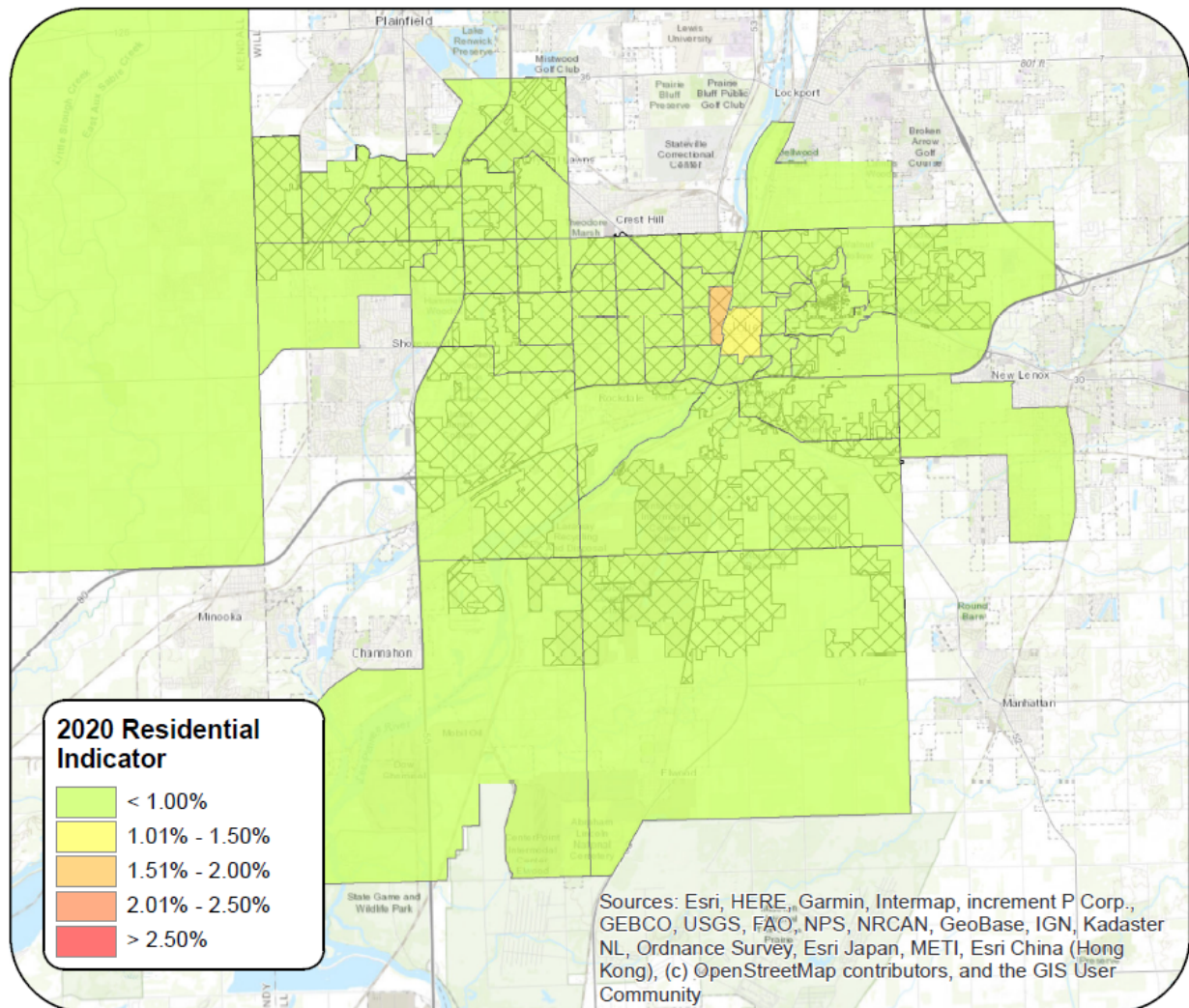
Affordability

Affordability is a key project consideration. To increase understanding and awareness of affordability issues related to the project alternatives, an evaluation of key affordability indicators for the City of Joliet's water system service area was performed. Specifically, median household income (MHI), federal poverty limits by household, and percentage of renters paying over 35% of income in rent were analyzed. These socioeconomic indicators are used to help identify household areas within the community that likely experience a disproportionate financial burden from water utility bills. Multiple alternatives require annual, double-digit water rate increases for more than a decade. Layering alternative rate projections over the available affordability indicators projects potential affordability constraints using the Environmental Protection Agency's (EPA) current water affordability framework. The EPA framework deems yearly water bills totaling over 2.5% of median household income a high burden on rate payers. This EPA framework is applied to the census tract images shown in Figures 13, 14, 15, 16 and 17 below. With a focus on a range of bill impacts over time, comparisons of financial burden were projected for 2020, 2030 and 2036¹¹. Some recommendations for addressing affordability challenges are presented following the analysis. Figures 13 through 17 below illustrate the affordability analysis performed for the City of Joliet and two of its alternative rate scenarios. The two scenarios presented were identified as the least and most affordable options of the alternative rate projections and analyzed in 2020, 2030 and 2036. The first is the Indiana Intake 60 MGD alternative which has the lowest bill impact over time. The second is the CWDM 30 MGD alternative which has the highest bill impact over time.

¹¹ 2036 is the first year of full debt repayment

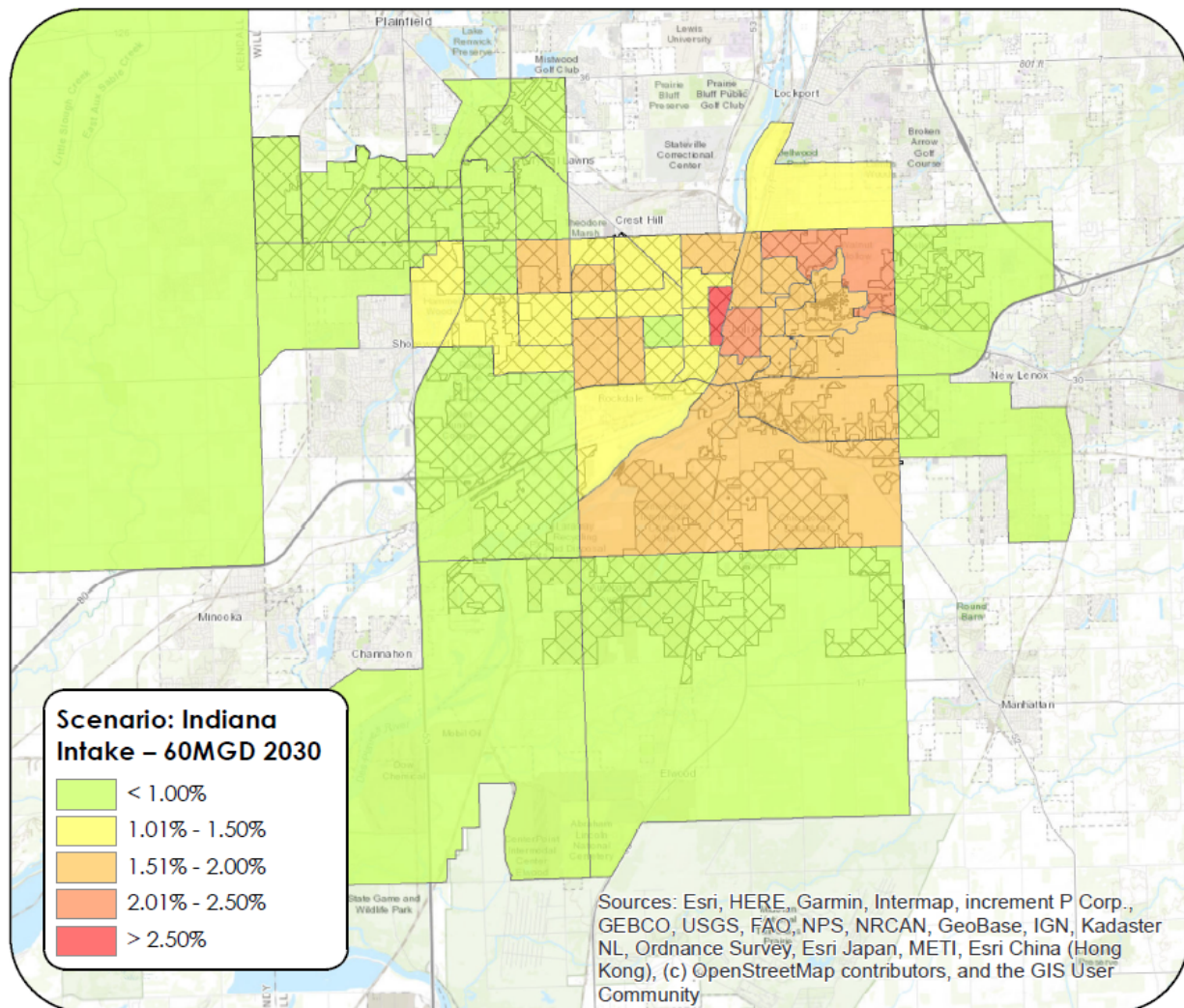
Reference: Joliet Alternative Water Source Program – Funding Strategy Memo

Figure 13 - 2020 Residential Indicator (Current Water Rate Costs as a % of MHI)



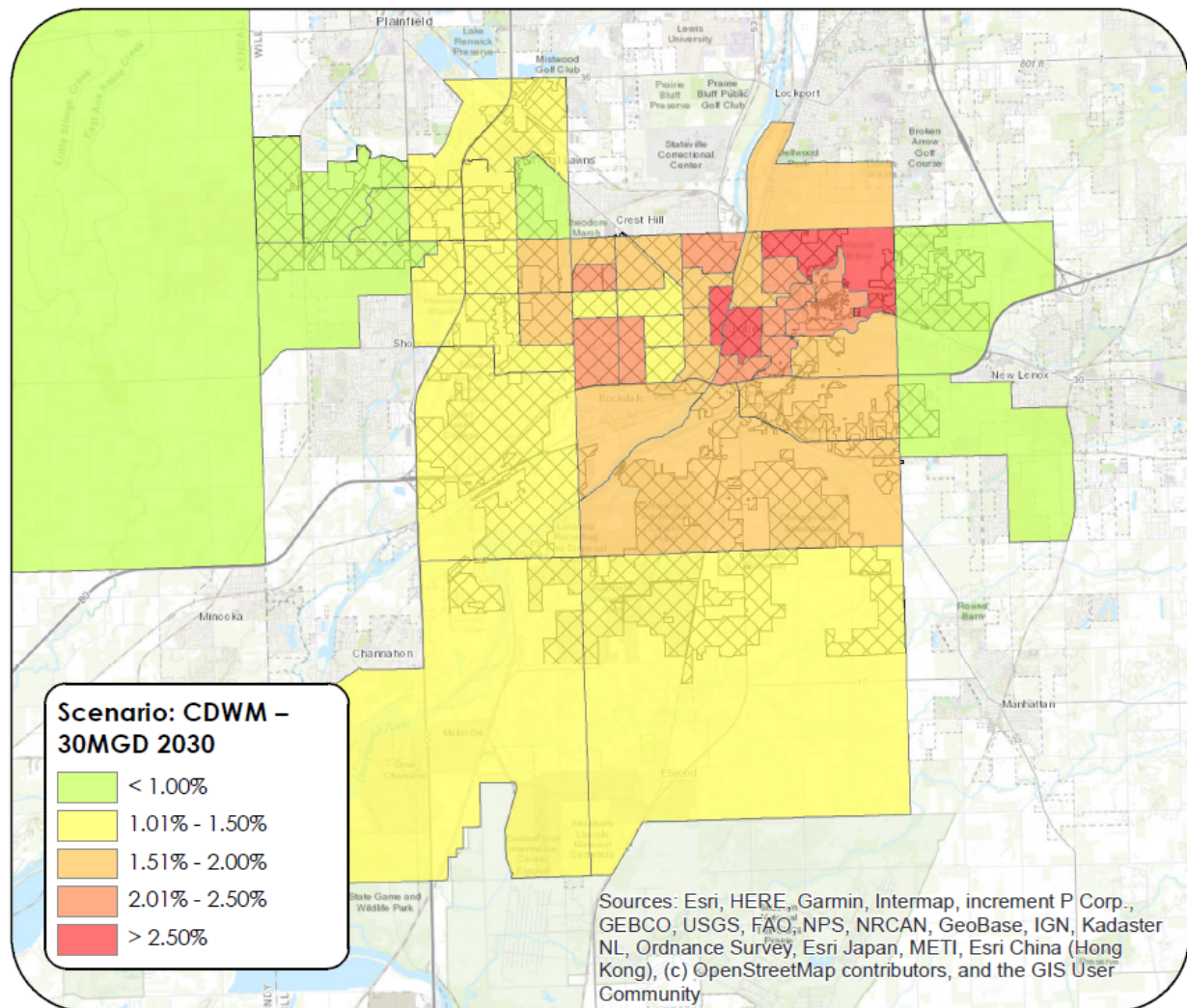
Reference: Joliet Alternative Water Source Program – Funding Strategy Memo

Figure 14 - 2030: Indiana Intake 60 MGD Scenario (2030 Water Rate Costs as a % of MHI)



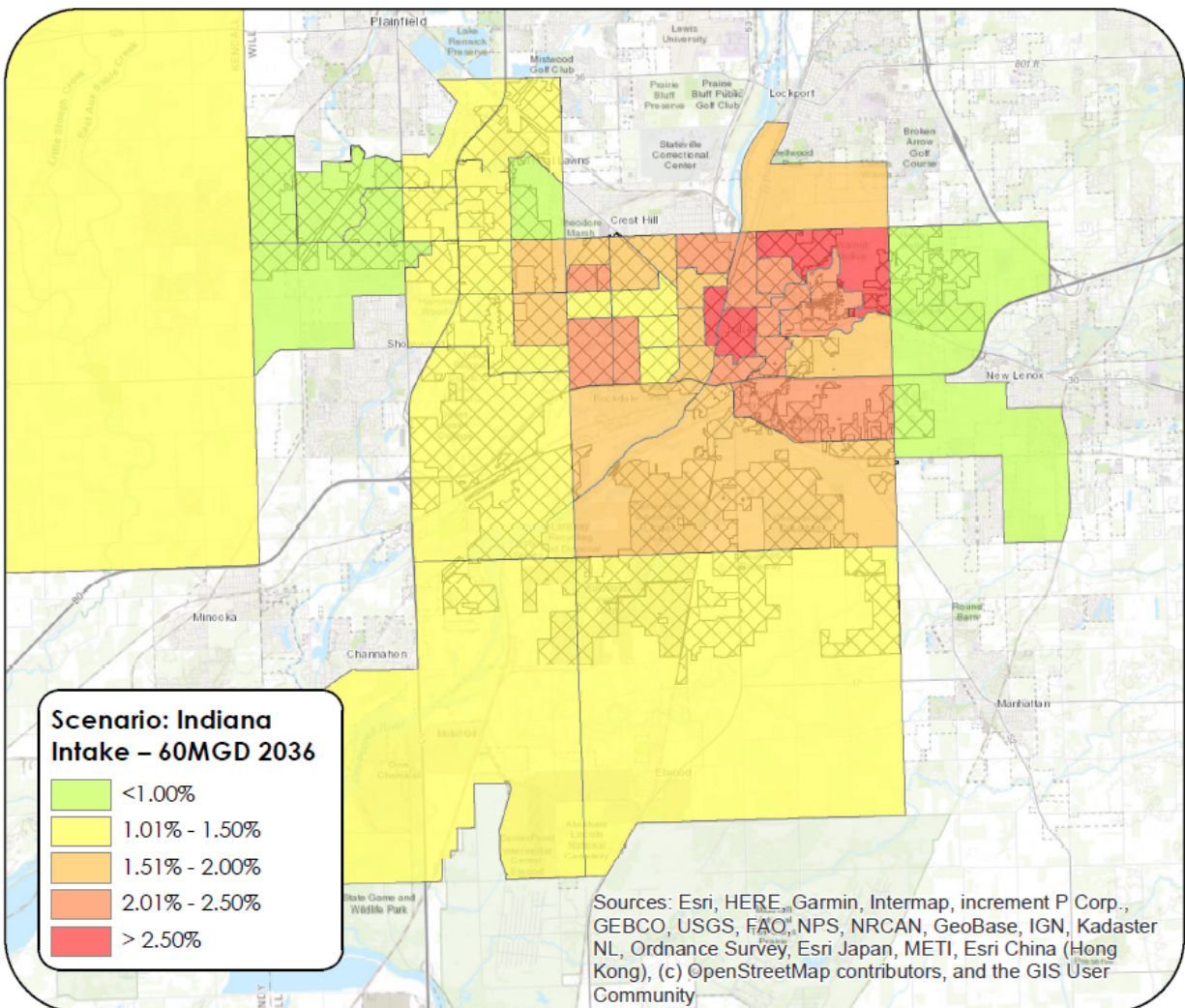
Reference: Joliet Alternative Water Source Program – Funding Strategy Memo

Figure 15 - 2030: CDWM 30 MGD Scenario (2030 Water Rate Costs as a % of MHI)



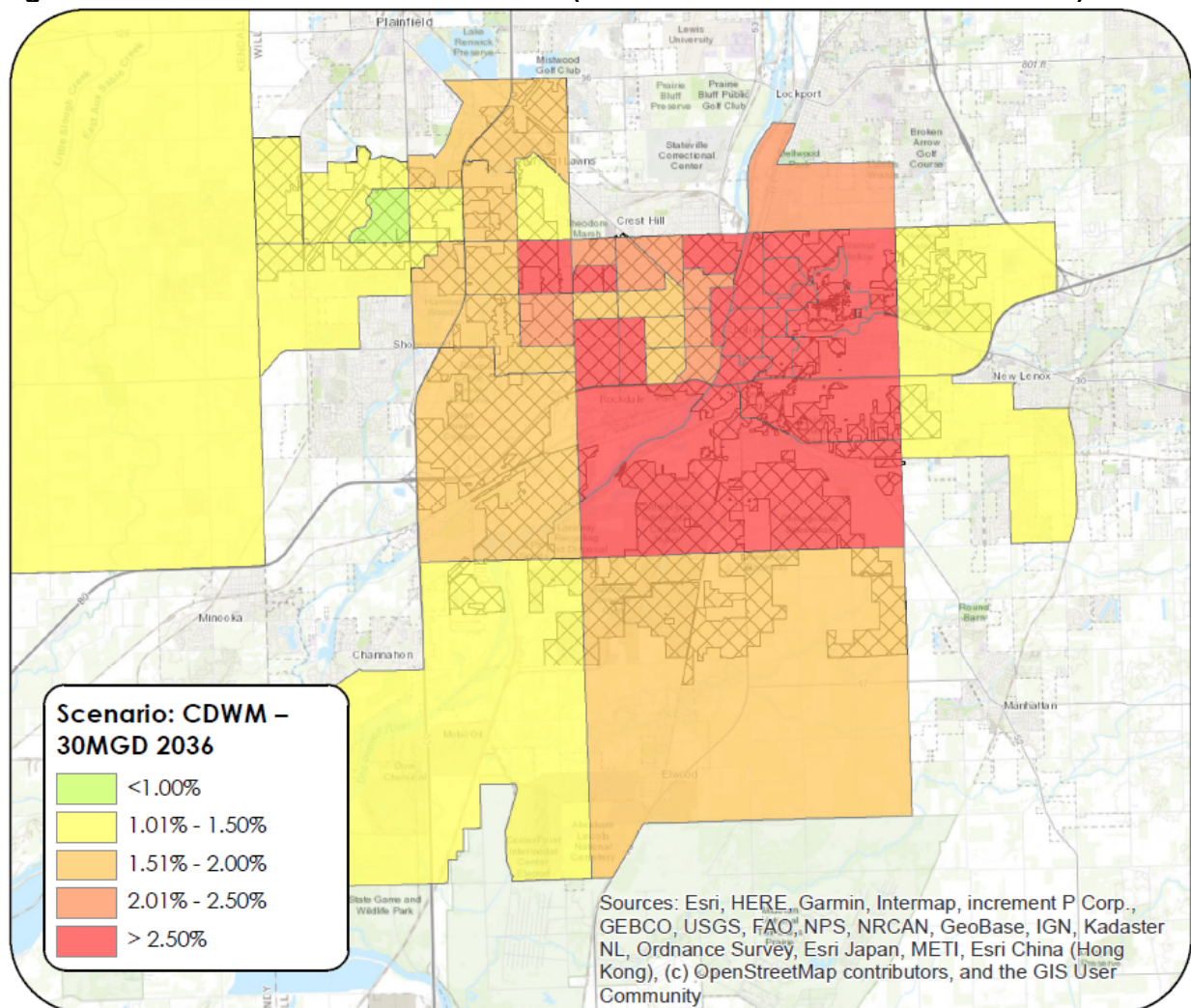
Reference: Joliet Alternative Water Source Program – Funding Strategy Memo

Figure 16 - 2036: Indiana Intake 60 MGD Scenario (2036 Water Rate Costs as a % of MHI)



Reference: Joliet Alternative Water Source Program – Funding Strategy Memo

Figure 17 - 2036: CDWM 30 MGD Scenario (2036 Water Rate Costs as a % of MHI)



Reference: Joliet Alternative Water Source Program – Funding Strategy Memo

Shown in the Figures above, affordability varies across the service area with downtown Joliet and the near east side experiencing a disproportionate financial burden. As the City balances projects and replacement/upgrades of aging infrastructure and affordability to its customers, the City can use the affordability analysis to target economically disadvantaged pockets within its service area. Possible approaches for addressing this increasing affordability challenge include rate structure modifications beyond the current senior rates, and customer assistance programs.

The City's current residential water rate structure consists of a base charge (referred to as the water daily charge) and 2 tiers: tier one includes the first 2 hundred cubic feet (HCF) of water use and tier two includes all use above 2 HCF. Additionally, the City offers a senior rate for single-family and multi-family eligible households. This rate is about a 30% discount on the usage rate and 10% discount on the base charge. With this rate structure, the City is helping a large proportion of fixed-income customers within an age-based assistance program.

The City could pursue a more inclusive rate structure benefiting more customers with financial challenges by expanding the first tier of usage from 2 HCF to approximately 5 HCF. Often this type of rate structure incorporates essential indoor use in the first tier. Water use in the winter months is used as a proxy for essential indoor water use. Expanding the threshold for tier one would encompass more usage at a lower rate (called a lifeline rate). It is recommended that the City complete a customer bill analysis to understand average winter monthly usage to assist in determining the 1st tier size.

Many utilities around the country have a rate structure that encompasses normal use within its 1st tier for an average-sized household, on an average-sized lot with average usage. The 2nd tier would then cover more 'excess' usage such as irrigation in summer months or water usage that is not imperative for washing, cleaning, and sanitation for an average household. In conjunction with a modification to the tier structure, the City could keep the senior discount to cover low/fixed-income households creating a robust assistance program driven by rate structure alternatives. The Albuquerque Water Utility Authority has done something similar with their rate structure which is based on a customer's average winter quarter water usage. The usage tiers then increase, per customer, as usage goes to 150%, 200%, 300% and 400% of that winter quarter usage. A structure such as this provides a lifeline rate and promotes conservation and responsible water use, important in an arid climate such as New Mexico, but also important for Joliet where demonstrating responsible water use is a condition of a Lake Michigan Allocation permit.

Customer assistance programs (CAPs) are another approach to mitigating the financial impacts of rate increases on a utility's most vulnerable customers. As the City begins to explore a CAP, considerations are made for eligibility requirements, discounts offered/level of assistance, funding sources, and administration of the program. These key drivers of a CAP begin with identifying eligibility requirements. Typically, a utility looks at MHI, qualifications established by another government program such as the Low-Income Home Energy Assistance Program (LIHEAP), Supplemental Nutrition Assistance Program (SNAP), or Federal Poverty limits when determining assistance program eligibility. Identifying the correct balance of eligibility criteria, backed by customer billing analysis and projected participation rates will yield defensible and accurate revenue projections when assessing a customer assistance program.

Reference: Joliet Alternative Water Source Program – Funding Strategy Memo

Determining the amount of assistance to be provided as well as the funding source that is available will help offset the loss of revenue. Generally, utilities can fund CAPs four different ways including

- transfers from a general or other enterprise fund,
- offsetting costs by revenue recovery of normal rates,
- specified non-rate revenue sources, or
- grants which are typically difficult to predict.

Each funding option has its pros and cons and the City should weigh all the differences to determine an acceptable and legal funding source to achieve its assistance objectives.

One example of a customer assistance program is demonstrated by the Mobile Area Water & Sewer System (MAWSS) in Mobile, Alabama. MAWSS is using non-rate revenues – cell tower leasing revenue (\$400k annually) – to fund its program. MAWSS implemented an eligibility threshold of households making 125% or less than the federal poverty limit based on household size. This approach limits the total possible participants in the program and makes MAWSS' current funding source sustainable into the future.

Additionally, the City of Omaha, Nebraska implements a sewer rate assistance fund (SRAF) to help offset rate increases to low-income families. Similar to MAWSS, Omaha ties customer eligibility to a percentage of the federal poverty level. However, Omaha has deemed that revenue contributions for the program will come from its operating budget, in effect receiving funding for the program across its full range of wastewater customers. Recovering revenue from all customers to fund the CAP has the benefit of spreading the cost across thousands of customers and often an average customer may not feel the gross bill impact. Omaha partners with the Municipal Utilities District (MUD) for program administration. MUD bills utility customers and applies LIHEAP registration, which helps administer the program keeping costs down as it is integrated into existing infrastructure.

Another utility, the Toho Water Authority in Florida, has taken a multi-pronged approach to affordability unique to the other examples listed above. Toho, similar to other utilities, has a relatively high 1st tier of water usage at 4,000 gallons/month and charges a lower usage rate so customers' bills at this lower usage level are 30% less compared to other Florida agencies. Additionally, the utility has developed the Toho Assistance Program, or TAP, which is a one-time 'bill-forgiveness' allowing customers to focus on other aspects of their individual monthly budgets that may be trending toward possible disconnection or priorities. The TAP is funded by all customers who elect to round up their monthly bills which allows customers to offer community support to neighbors in their time of need.

CAPs have the ability to help low-income households make ends meet month-to-month by providing assistance for the costs of basic needs for a family and can create goodwill within a community. When evaluating a CAP, there are a multitude of factors to consider, many of which are outlined above. The City can plan to assist in reducing the financial burden placed on customers, especially when water supply scenarios warrant prolonged rate increases within a service area.

Reference: Joliet Alternative Water Source Program – Funding Strategy Memo

Alternative Water Source Program Financial Sensitivity

For the community, the City of Joliet wants to provide sustainable, reliable, and high-quality water in an efficient manner. To achieve this, Joliet is proactively working to mitigate new water source risks through technical and financial analysis and preliminary negotiations with water supply and access providers. Funding analyses serve to highlight financial risks associated with the project and specific project alternatives. Of the analysis completed to-date, a handful of scenarios illuminating key sensitivities have been detailed in the following section.

Capital Costs and Financing

The New Indiana Intake alternatives have higher construction costs. These higher construction costs require capital from external sources, namely WIFIA, SRF and revenue bonds. The long-term financing costs are heavily dependent on interest rates. Increases or decreases in interest rates between now and when debt is issued can have measurable impacts on Joliet customer rates, and the total cost of water. Even if interest rates do not go up, an inability to secure lower cost debt, like WIFIA and SRF, would also result in a higher WACC for the project.

Interest Rates

Interest rate sensitivity was tested by assessing the effect of 1% (100 basis points), 2%, and 3% increases in interest rates across all debt instruments.¹² Interest rate increase impacts on water rates and the Total Cost of Water calculations were evaluated.

Figures 18, 19, and 20 show the impact of a 3% interest rate increase on the least and most capital-intensive alternatives for Joliet, the 60 MGD CDWM¹³ and New Indiana Intake alternatives.

¹² Example: Based on current interest rate assumptions, a 1% rate increase results in a capital stack made up of 4% interest WIFIA loans, 2.5% interest SRF loans, and 5% interest revenue bonds.

¹³ Joliet's share of the costs for the CDWM 60 MGD option are the lowest capital cost option.

Reference: Joliet Alternative Water Source Program – Funding Strategy Memo

Figure 18 – Sensitivity Analysis: Average Monthly Bill - 60 MGD New Indiana Intake Base Case vs. 3% Interest Rate Increases

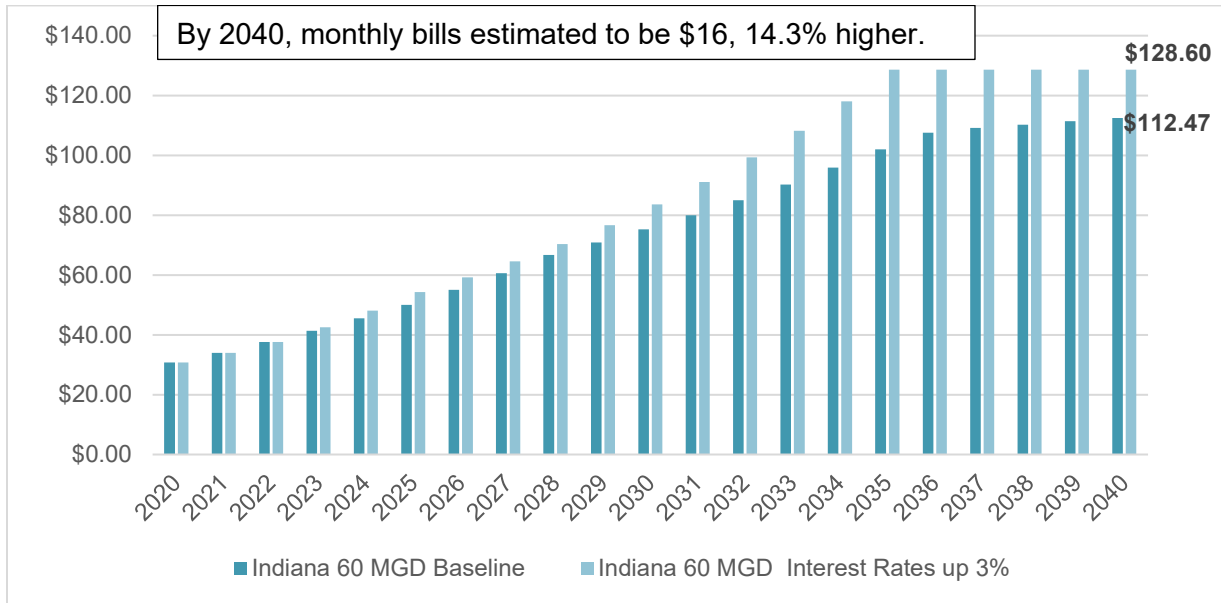
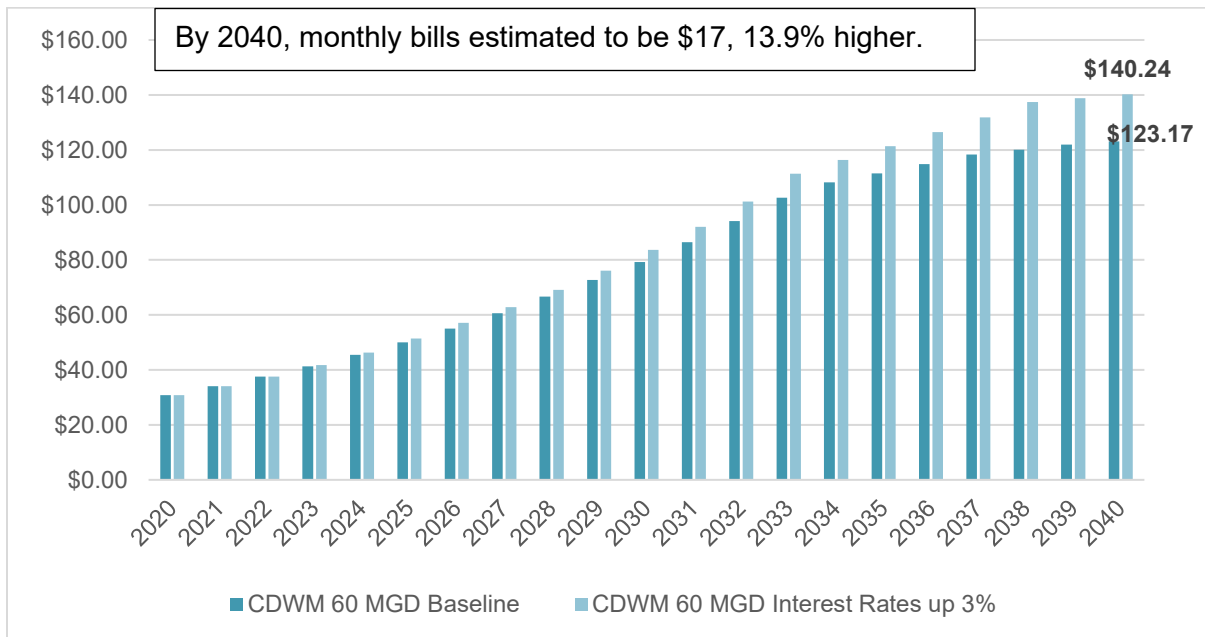


Figure 19 – Sensitivity Analysis: Average Monthly Bill - 60 MGD CDWM Base Case vs. 3% Interest Rate Increases

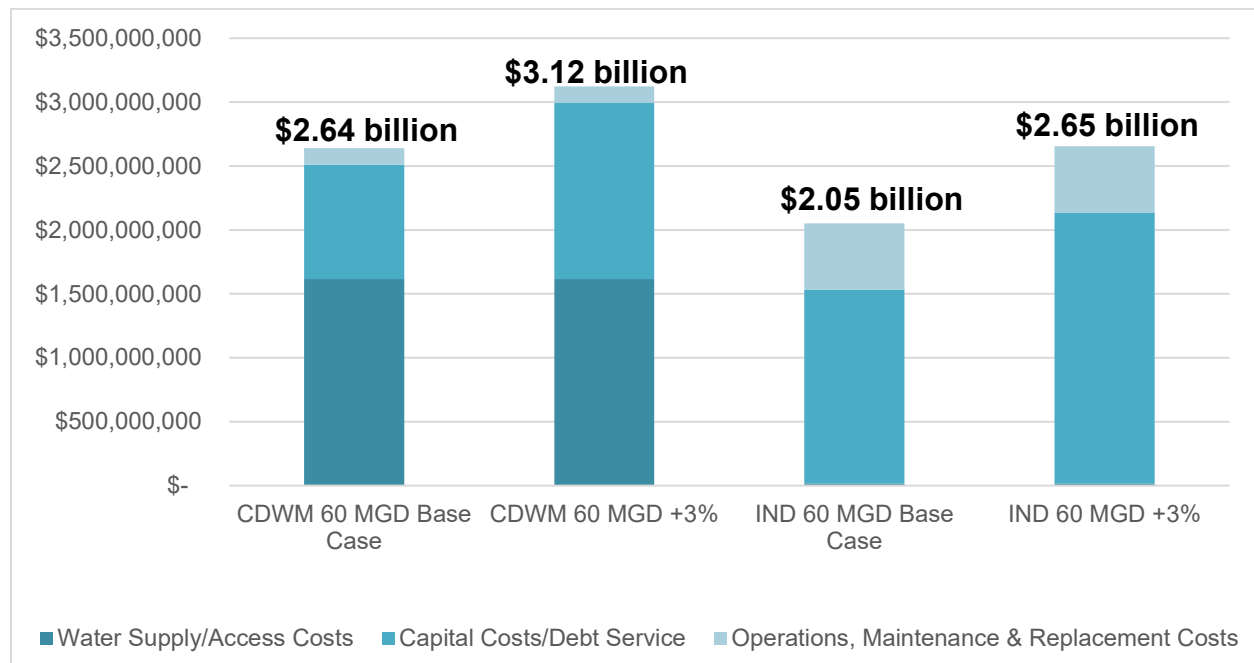


Reference: Joliet Alternative Water Source Program – Funding Strategy Memo

Higher financing interest rates require higher water rate increases starting in 2023 for the CDWM and New Indiana Intake 60 MGD options. To meet debt service obligations, higher interest rates would result in higher annual rate increases during project development and construction. The pattern of rate increases for both alternatives is similar though, as expected, the New Indiana Intake option increases are higher to meet the higher debt service.

Figure 20 shows base case debt assumptions versus a 3% interest rate increase in terms of impact on the Total Cost of Water calculation.

Figure 20 – Sensitivity Analysis: 50-year Total Cost of Capital 60 MGD CDWM and New Indiana Intake Alternatives Base Case vs. 3% Interest Rate Increases



There is not a significant difference between the proportional increases of the CDWM and New Indiana Intake 2040 base case monthly water rates and projected monthly water rates that account for a 3% increase in available interest rates. In both scenarios, rates go up about 14% from the base case. CDWM rates are 13.9% higher than base case and New Indiana Intake rates are 14.3% higher. However, a 3% increase in interest rates results in a Total Cost of Water increase of 18% for the CDWM 60 MGD alternative compared to a Total Cost of Water increase of 29% for the New Indiana Intake 60 MGD alternative. The CDWM 60 MGD alternative still has a higher Total Cost of Water than the New Indiana Intake 60 MGD alternative but with 3% higher interest rates, the CDWM Total Cost of Water is 17.5% higher than the New Indiana Intake alternative, compared to being 28.5% higher under base case assumptions.

Reference: Joliet Alternative Water Source Program – Funding Strategy Memo

WIFIA

Because different financing comes with different interest rates, the mix of funding sources can impact the weighted average cost of capital (WACC) and the Total Cost of Water. Importantly, different funding repayment terms can also reduce financing costs. Joliet has been selected to apply for \$294 million in WIFIA loans and has submitted a second letter of interest to qualify for more WIFIA loans. To understand the impact of less WIFIA funding, scenarios were run with WIFIA loans capped at \$294 million. Revenue bonds are assumed to fill the gap in funding related to the WIFIA cap.

A reduction in WIFIA funding had very little impact on rates and actually reduces the 50-year Total Cost of Water. Under base case assumptions, WIFIA principal and interest payments are deferred for five years after substantial completion. Over this period of deferral, WIFIA capitalized interest results in more WIFIA principal outstanding. The larger the WIFIA loan, the larger the accrued interest over the period of deferral. By 2035 when Joliet is assumed to begin repaying WIFIA, the annual payment has grown to reflect the higher WIFIA principal outstanding. With WIFIA capped at \$294 million, WIFIA loans do not accrue as much interest during construction and after substantial completion. Base case WIFIA loan assumptions range from \$355 million to \$821 million in WIFIA loans. Even though capping WIFIA at \$294 million results in a higher project WACC (associated with using revenue bonds to fill the WIFIA financing gap), the base case deferred repayment assumptions and accompanying accrued interest negate WIFIA base case benefits associated with the lower WIFIA interest rate. This insight raises the question of how best to size, apply, and repay WIFIA.

Scenario analysis show optimizing WIFIA repayment can mitigate the negative impact of accrued interest. Using base case WIFIA loan amounts, scenarios were run with WIFIA full repayment starting at substantial completion (2030) and with WIFIA interest-only payments starting at substantial completion with full repayment of principal and interest starting in 2035. The different repayment options resulted in minor increases in annual water rate increases in early years but showed slightly lower water rates by 2040 and overall cost savings for the life of the project. Figure 21 compares rate increases necessary for the New Indiana Intake 60 MGD base case, WIFIA principal and interest repayment starting in 2030, and WIFIA interest payments starting in 2030, followed by full repayment of principal and interest in 2035.

Reference: Joliet Alternative Water Source Program – Funding Strategy Memo

Figure 21 – Sensitivity Analysis: WIFIA Repayment – Impact on Annual Water Rate Increases, New Indiana Intake 60 MGD Alternative

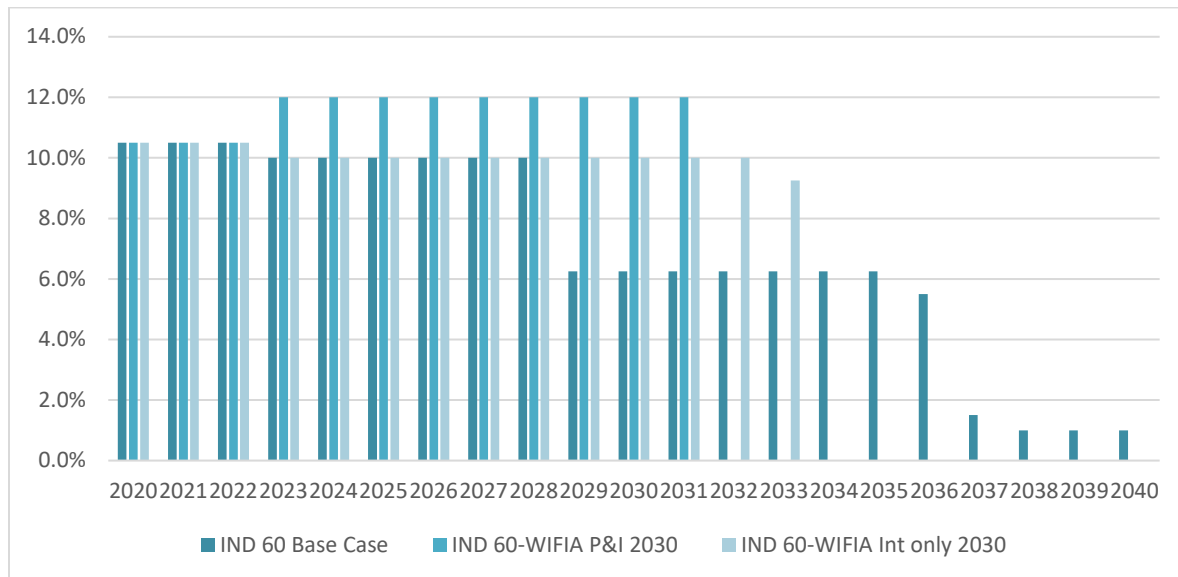


Table 9 shows projected 2040 Joliet monthly water bills for the different repayment scenarios and the total WIFIA payments over the life of the loan. While immediate repayment of WIFIA does require higher annual water bill increases between 2023 and 2031, the difference in rate increases is not significant and the earlier bill increases reduce the need for rate increase later. Overall project savings recommend starting WIFIA repayment at substantial completion.

Table 9 – Bill and Total Financing Costs: Alternate WIFIA Repayment Scenarios

Scenario	Water Bill 2040	Total WIFIA Repayment
IND 60 MGD Base Case	\$112.47	\$1,597,000,000
IND 60 MGD WIFIA Int only 2030	\$106.36	\$1,532,000,000
IND 60 MGD WIFIA P&I 2030	\$104.36	\$1,378,000,000

Escalation

Escalation assumptions have been applied to capital costs, OM&R, some access costs for the New Indiana Intake alternative, and water purchase costs for the CDWM alternative. Project alternative sensitivity to different escalation rates on OM&R and water purchase costs have been evaluated. For the CDWM alternatives, water purchase cost escalation has the most significant impact on the Total Cost of Water and customer water rates. 2%, 1.30% (for CDWM 30 MGD alternative) and 1.39% (for CDWM 60 MGD alternative) water purchase rate annual increases are described and illustrated earlier in this memo.

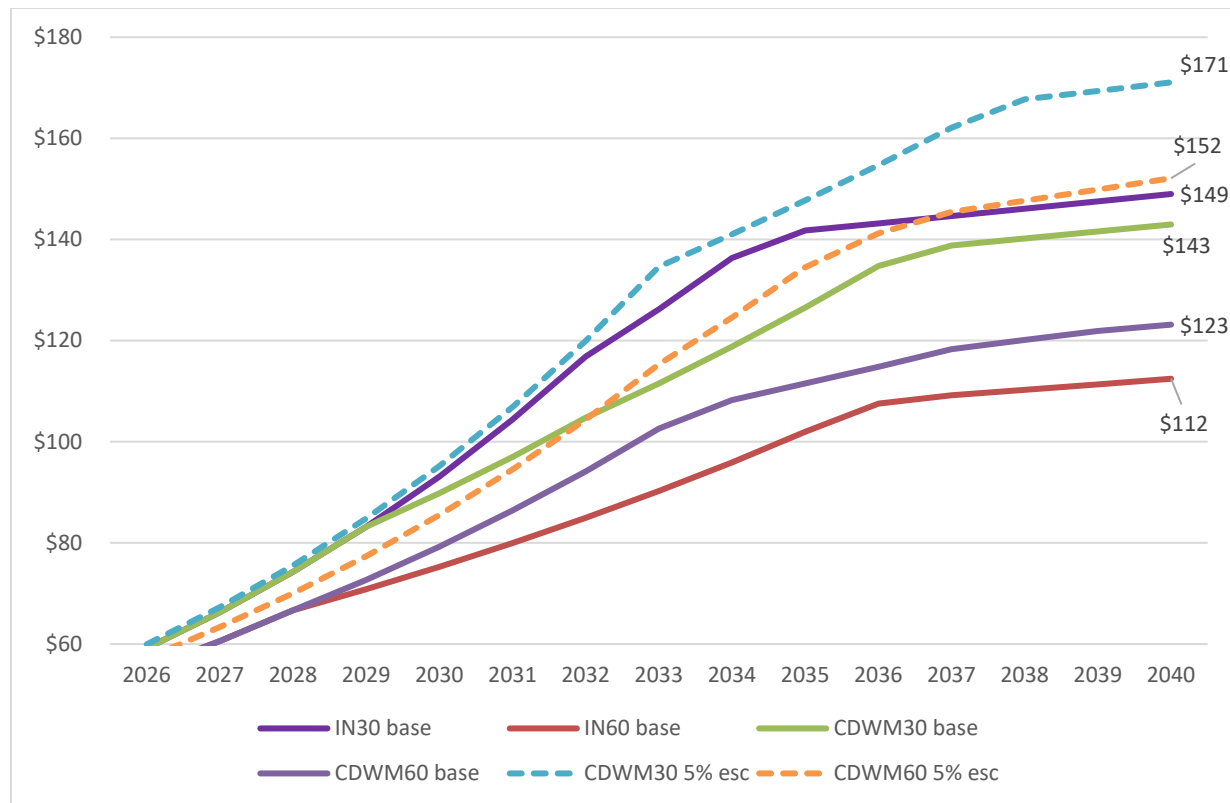
Reference: Joliet Alternative Water Source Program – Funding Strategy Memo

While Joliet and CDWM have negotiated a water rate methodology which is intended to result in a true cost of water wholesale rate, the regulatory changes or other unforeseen infrastructure needs could result in significant replacement and treatment costs in the future. Additionally, reductions in CDWM demand have the potential to increase CDWM rates charged to Joliet. CDWM cost increases and reductions in demand could result in higher water purchase rates than are assumed currently.

As stated earlier in this memo, the American Water Works Association 2019 Water and Wastewater Rate Survey of over 230 US water utilities found that, on average, between 1996 and 2018, water charges increased 5.09% annually for water. The survey found between 2016 and 2018, charges increased 7.2% annually.

To test sensitivity to greater than 2% (assumed CPI escalation), 5% water purchase rate increases were evaluated for the CDWM option. Figure 12 compares the Joliet monthly average bill for all alternatives assuming a 5% water purchase rate increase for CDWM alternatives.

Figure 22 – Sensitivity Analysis Alternatives Comparison: Water Purchase Rate Escalation, Average Monthly Water Bill

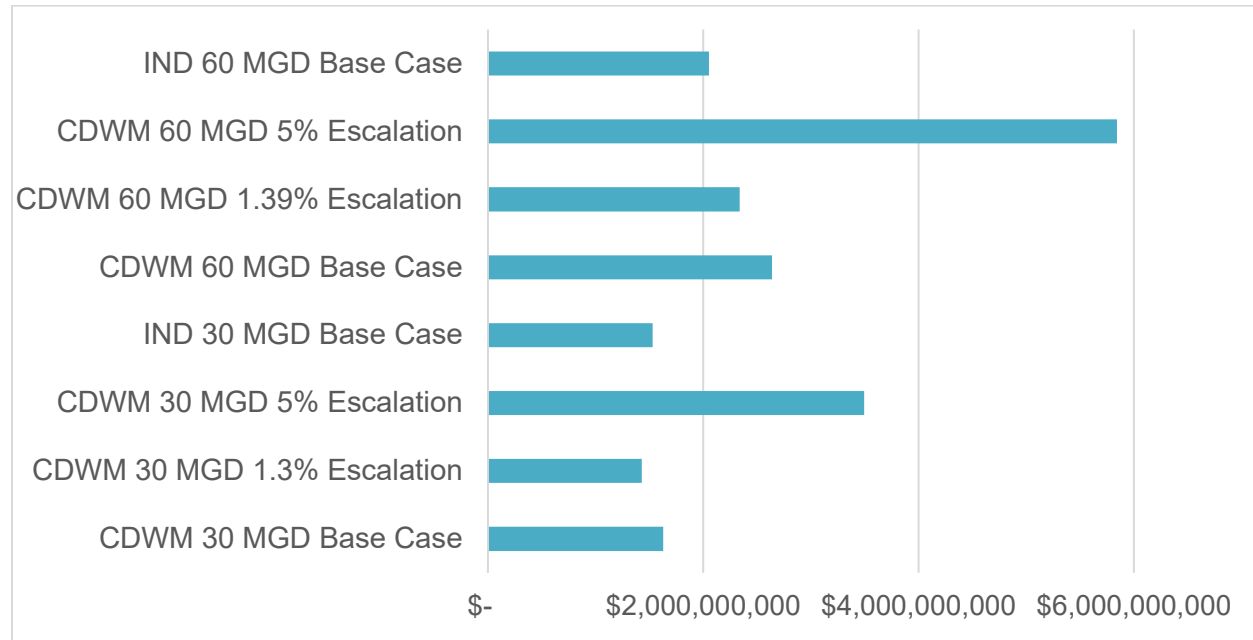


Starting today, an annual water purchase rate of escalation of 5% would result in a 20% higher monthly water bill in 2040. The 50-Year Total Cost of Water demonstrates the CDWM alternatives' sensitivity to water purchase costs escalation. Applying a 3% discount rate, Figure 23 presents the

Reference: Joliet Alternative Water Source Program – Funding Strategy Memo

Total Cost of Water calculation if water purchase costs escalate by 2% (base case), by 1.30% and 1.39% (as suggested by CDWM), and by 5% until 2079.

Figure 23 – Sensitivity Analysis Alternatives Comparison: Water Purchase Rate Escalation, Total Cost of Water



Discount Rates

Base case assumptions assumed a discount rate of 3% to calculate the present value of expected future project costs. The discount rate is based on the cost of capital. Part of the sensitivity analysis for the alternatives involved applying a range of discount rates to highlight impact on the Total Cost of Water. At the upper range, a 5% discount rate was applied to all alternatives. At the lower range, no discount rate was applied.¹⁴ Table 6 illustrates the different outcomes of applying 3%, 5% and 0% discount rates.

Compared to the base case, escalating costs (i.e. water purchase costs) make up a greater portion of the total costs in the “NO Discount Rate” scenario and a smaller portion in the “5% Discount Rate” scenario. But even assuming a 5% discount rate, while the 50-year Total Cost of Water gets closer for the alternatives, the CDWM alternatives still have the higher 50-year total.

¹⁴ No discount rate was applied to the Total Cost of Water calculation in the 2019 Phase II analysis.

Reference: Joliet Alternative Water Source Program – Funding Strategy Memo

Table 10 – CDWM Alternatives 50-year Total Cost of Water Calculation Sensitivity to Varied Discount Rates

3% Base Case	CDWM 30 MGD	CDWM 60 MGD	CDWM 60 MGD (Joliet Costs)
Water Supply/Access Costs	\$ 949,000,000	\$ 1,615,000,000	\$ 969,000,000
Capital Costs/Debt Service	\$ 626,000,000	\$ 896,000,000	\$ 476,000,000
OM&R	\$ 52,000,000	\$ 128,000,000	\$ 43,000,000
TOTAL	\$ 1,627,000,000	\$ 2,639,000,000	\$ 1,488,000,000
NO Discount Rate	CDWM 30 MGD	CDWM 60 MGD	CDWM 60 MGD (Joliet Costs)
Water Supply Costs	\$ 2,799,000,000	\$ 4,788,000,000	\$ 2,873,000,000
Capital Costs/Debt Service	\$ 1,215,000,000	\$ 1,791,000,000	\$ 952,000,000
OM&R	\$ 175,000,000	\$ 396,000,000	\$ 151,000,000
TOTAL	\$ 4,189,000,000	\$ 6,975,000,000	\$ 3,976,000,000
5% Discount Rate	CDWM 30 MGD	CDWM 60 MGD	CDWM 60 MGD (Joliet Costs)
Water Supply Costs	\$ 515,000,000	\$ 872,000,000	\$ 523,000,000
Capital Costs/Debt Service	\$ 425,000,000	\$ 597,000,000	\$ 318,000,000
OM&R	\$ 26,000,000	\$ 68,000,000	\$ 21,000,000
TOTAL	\$ 966,000,000	\$ 1,537,000,000	\$ 862,000,000

Reference: Joliet Alternative Water Source Program – Funding Strategy Memo

**Table 11 – New Indiana Intake Alternatives 50-year Total Cost of Water Calculation
Sensitivity to Varied Discount Rates**

3% Base Case	IND 30 MGD	IND 60 MGD	IND 60 MGD (Joliet Costs)
Water Supply/Access Costs	\$ 17,000,000	\$ 17,000,000	\$ 9,000,000.00
Capital Costs/Debt Service	\$ 1,137,000,000	\$ 1,517,000,000	\$ 778,000,000
OM&R	\$ 375,000,000	\$ 518,000,000	\$ 278,000,000
TOTAL	\$ 1,529,000,000	\$ 2,052,000,000	\$ 1,065,000,000
NO Discount Rate	IND 30 MGD	IND 60 MGD	IND 60 MGD (Joliet Costs)
Water Supply Costs	\$ 36,000,000	\$ 43,000,000	\$ 23,000,000
Capital Costs/Debt Service	\$ 2,269,000,000	\$ 3,120,000,000	\$ 1,594,000,000
OM&R	\$ 919,000,000	\$ 1,201,000,000	\$ 633,000,000
TOTAL	\$ 3,224,000,000	\$ 4,364,000,000	\$ 2,250,000,000
5% Discount Rate	IND 30 MGD	IND 60 MGD	IND 60 MGD (Joliet Costs)
Water Supply Costs	\$ 13,000,000	\$ 14,000,000	\$ 8,000,000
Capital Costs/Debt Service	\$ 719,000,000	\$ 1,000,000,000	\$ 510,000,000
OM&R	\$ 166,000,000	\$ 220,000,000	\$ 112,000,000
TOTAL	\$ 898,000,000	\$ 1,234,000,000	\$ 630,000,000

Reference: Joliet Alternative Water Source Program – Funding Strategy Memo

Conclusion

This Funding Strategy Memo highlights material funding considerations for the Joliet Alternative Water Source Program. Key figures and insights have been included in an effort to support decision makers and to inform stakeholders. Not all of the analyses completed to date was presented in this memo. Uncertainties and opportunities for funding optimization remain.

The New Indiana Intake alternatives have higher construction costs, requiring more financing. Rising interest rates would have a greater impact on the New Indiana Intake 50-year Total Cost of Water. Joliet has no control over interest rates but can work to secure the lowest possible rates through government loan programs. Additionally, the opportunity exists to sculpt repayment of WIFIA and other debt instruments to maximize benefits and minimize costs.

The largest on-going cost component of the CDWM alternative is water purchase costs. Monthly bills and the 50-year Total Cost of Water calculation are sensitive to increases in water purchase escalation. CDWM has agreed to apply a cost-of-service methodology to determine Joliet's wholesale water rates. The approach has the potential to expose Joliet to unforeseen increases in CDWM costs.

Joliet's customers need a long-term, sustainable source of water. The Alternative Water Source Program will provide drinking water to generations of Joliet residents but many of the costs of the new system with impact rate payers in the next two decades. Efforts must be made to reduce the costs through less expensive financing; contractual protections in agreements with partners, lenders, and service providers; and by reducing the financial burden on those most vulnerable.

Key conclusions from the review and analysis of funding and financing issues related to Joliet's selection and implementation of an Alternative Water Source Program indicate that City priorities should include:

- Mitigating risk exposure to interest rate increases by maximizing funding from low-interest government loan programs.
- Optimizing repayment of WIFIA loans to balance the impact of customer rate increases in early years with total debt cost associated a decade of capitalized interest accrual.
- Pursuing contractual efforts to control project cost escalation, particularly annual water purchase rate escalation.
- Proactively seeking new funding opportunities.
- Investigating the applicability of CAPs to mitigate rate impacts on customers.