Village of Lake Zurich

November 6, 2023

Financing Construction Costs for Lake Michigan Water

Lake Zurich Water System

- Current Water Source: Deep water wells
  - Water drawn from St. Peter aquifer 800 ft. down
  - Groundwater pumped to cation exchange vessels
  - Finished water disinfected and fluorinated before distribution
  - Waste sent to regeneration waste tanks before disposal to sanitary sewer
  - Waste stream sent to Lake County wastewater treatment facility

Factors for Transition to Lake Michigan Source

- IEPA, IEMA, and Lake County will not accept the level of radium in the Village's waste stream
  - Find new method of disposal
  - Reduce radium levels going to sanitary sewer
- Upcoming CIP replacement investments in existing facilities

Factors for Transition to Lake Michigan Source

- IDNR Lake Michigan Allocation
- Alliance for the Great Lakes
- Long term sustainability of aquifer
- Risk of water source disruption?

Source: Daily Herald

Source: TC Palm/USA Today

Source: USA Today

Priorities for Transition to Lake Michigan Source

- IEPA/IEMA/Lake County compliance with radium removal from waste stream
- Long term sustainability and quality of water source
- Long term sustainability of Enterprise Fund to cover capital and operations/maintenance costs
  - Realistic capital construction cost estimates
  - Maximize operational efficiency, minimize operational costs
- Future-proof system against new regulatory costs
- **Doing nothing is not a responsible or viable option**

Team Tackling the Transition to Lake Michigan Source

- Amrou Atassi, Senior Vice President, CDM Smith
- William Soucie, Executive Director
  Central Lake County Joint Action Water Agency
- Village Staff led by:

  Mike Brown, Public Works Director

  Amy Sparkowski, Finance Director

  Kyle Kordell, Management Services Director

  Michael Duebner, Assistant Village Manager

  Ray Keller, Village Manager

Preliminary Steps To Date

- "Before the Wells Run Dry: Ensuring Sustainable Water Supplies for Illinois" (Metropolitan Planning Council 2009)
- Groundwater Viability Report (Baxter & Woodman 2011)
- Lake Michigan water allocation from IDNR (2011)
- Preliminary Lake Michigan studies (2012-2015)
- Preliminary discussions with Lake Michigan partners, no further action taken (2015-2016)
- Notice to remove radium from Lake Zurich's waste stream (Nov. 2019)
- Comprehensive studies of radium removal/treatment and alternate source options (EEI – 2020-2021)

Preliminary Steps To Date

- Board workshop: direction to explore Lake Michigan as future water source (Jan. 2022)
- Intergovernmental agreement with CLCJAWA to share exploratory costs (Sept. 2022)
- CDM Smith presentation on preliminary Lake Michigan costs and options (Nov. 2022)
- CDM Smith Lake Michigan construction process, costs & timeline presentation (April 2023)
- CLCJAWA "Engagement" Resolution (May-June 2023)
- IEPA Project Plan Preparation and Environmental Review (August 2023)

Preliminary Steps To Date

- $5+ million invested in replacing/repairing aging water mains since 2016
- Replaced all water meters for improved billing accuracy (2018)
- Reduced unaccounted water loss rate from mid-20%s to 8%
- Evaluating current system for operational efficiencies (underway)

Lake Michigan Construction Costs

Estimated Total Program Costs

Item	Conveyance from CLCJAWA to Lake Zurich *Expected Range*	Lake Zurich Distribution System Improvements *Expected Range*
Construction costs	$38M-$44M	$18M-$22M
Contingency[1]	$9M-$11M	$5M-$6M
Change Orders[2]	$2M-$3M	$1M-$2M
Engineering[3]	$9M-$11M	$5M-$6M
Easements & Acquisitions	$0.5M	-
TOTAL EST. COST	**$59M-$69M**	**$29M-$36M**
TOTAL EST. COST IN 2027[4]	**$74M-$87M**	**$37M-$45M**
Program Costs	**$111M-$132M**	
CLCJAWA Connection Fee	$20M[6]	
TOTAL	**$131M-$152M**	

[1]Contingency:or undeveloped design details 20-30%
[2]Change orders assumed 5% of construction costs
[3]Engineering assumed 20% of construction costs including route study, field investigations, preliminary and detailed design, and construction phase services
[4]Escalated to assumed mid-point of construction at 6% per year
[5]Source water Corrosion Control Treatment study and well/facility demolition not included
[6] CLCJAWA connection fees are an estimate and have not been reviewed/approved by CLCJAWA Board

Source: CDM Smith 4/4/23

Village of Lake Zurich: Enterprise Fund

- FY 2022: $8.0 M in annual revenue
- Transition to Lake Michigan water:
  - Reduces current operating costs $1M annually
    (reduced power, chemical consumption, etc.)
  - Offset by CLCJAWA water usage charge
    - Projected $2.00/1000 gallons
    - Projected to be $1.1-$1.2 M annually based on current usage
- Approx. $3M annually in water/sewer mains replacements
- Need to replace aging distribution/collection (CIP)
- **No capacity to absorb Lake Michigan capital costs**

Lake Michigan Construction Costs

- Capital construction cost: $154 million (2026-2027)
- 3 financing components:
  - Village IEPA loan (30 years/3%)
    $45 million → $2.3 M/year
  - CLCJAWA IEPA loan (30 years/3%)
    $87 million → $4.5 M/year
  - CLCJAWA capital charge (30 years/0%)
    $22 million → $740 K/year
- Revenue stream needed:
  $7.5 million / year for 30 years starting 2028

Lake Michigan Construction Financing

Option 1: Lake Michigan Capital Rate:

- Billed at $X per 1,000 gallons (in addition to usage charge)
- +$3.00 annual rate increases for 5 years:
  - FY 2024 = +$3.00 (+$3.00 cumulative)
  - FY 2025 = +$3.00 (+$6.00 cumulative)
  - FY 2026 = +$3.00 (+$9.00 cumulative)
  - FY 2027 = +$3.00 (+$12.00 cumulative)
  - FY 2028 = +$3.00 (+$15.00 cumulative)
- +$15.00 cumulative rate by FY 2028 generates $7.6 million/annually to cover capital debt payments
- FY 2028 Lake Michigan capital rate remains flat for next 30 years of payments

Lake Michigan Construction Financing

Option 2: Lake Michigan Capital Rate + Non-Home Rule Sales Tax

- **0.5% Non-home rule sales tax increase adopted for water capital financing**
- Requires referendum approval November 2024
- NHRST increased collection begins July 2025
- NHRST ramps up to additional $2.5 M / year by FY 2026
- Revenue pledged to Lake Michigan construction
- **40% of NHR-eligible sales are by non-residents**

Lake Michigan Construction Financing

Option 2: Lake Michigan Capital Rate + Non-Home Rule Sales Tax

- Billed at $X per 1,000 gallons (in addition to usage charge)
- Variable annual rate increases for 5 years:
  - FY 2024 = +$3.00 (+$3.00 cumulative)
  - FY 2025 = +$1.50 (+$4.50 cumulative)
  - FY 2026 = +$1.50 (+$6.00 cumulative)
  - FY 2027 = +$2.00 (+$8.00 cumulative)
  - FY 2028 = +$2.00 (+$10.00 cumulative)
- +$10.00 cumulative rate by FY 2028 generates $7.6 million/annually to cover capital debt payments
- FY 2028 Lake Michigan capital rate remains flat for next 30 years of payments

Lake Michigan Construction Financing

Sample average monthly bill increases by household type (with NHRST):

Minimum bill (2,000 g/m):	Small Household (3,000 g/m):
2024: $6/month	2024: $9/month
2025: $9/month	2025: $13.50/month
2026: $12/month	2026: $18/month
2027: $16/month	2027: $24/month
2028: $20/month	2028: $30/month

Lake Michigan Construction Financing

Sample average monthly bill increases by household type (with NHRST):

Medium Household (5,000 g/m):

2024: $15/month

2025: $22.50/month

2026: $30/month

2027: $40/month

2028: $50/month

Large Household (9,000 g/m):

2024: $27/month

2025: $40.50/month

2026: $54/month

2027: $72/month

2028: $90/month

Lake Michigan Construction Financing

- Assumptions:
  - 507 million gallons billed annually
  - Lake Michigan Capital Rate is user-fee ($X per 1000 gallons billed)
  - Capital Rate is in addition to current user fee
    - FY 2024 combined water/sewer service charge: $20.43/1000 gallons (includes Village water/sewer + Lake County sewer)
    - Water/sewer service charge adjusted annually to cover operations costs

Lake Michigan Construction Financing

- Assumptions:
  - Both options generate approx. $20 million between FY 2024-2027
    - Can be used to pay-as-we-go, reducing total amount financed
    - Reduced total amount financed = reduce FY 2028 capital rate increase
  - Construction costs projected to 2026-2027
  - Construction costs increase $6M for each year construction is delayed beyond 2026-2027

Alternatives to Lake Michigan: Radium Treatment Technologies

Decision Component	Pretreatment	Replacement		Treatment/Handling of Waste			
	WRT Radium Selective Media	WRT Radium Selective Media	Lime Softening	WesTech SPIRALATOR	Liquid Hauling	Solid Separation and Settling	Gilberts Solid Separation Design
Project Costs							
Capital Cost	$$	$	$$$	$$$	$$$	$$$	$$$
Annual O&M Cost	$$	$$	$$$	$$	$$$	$$	$$
Total Present Worth Cost	$$$	$$	$$$	$$$	$$$	$$$	$$$
Water Quality							
Anticipated Change to Finished Water Quality	⟷	↓	↑	⟷	⟷	⟷	⟷
Operation and Maintenance							
O&M Responsibility	1	1	3	3	1	3	3
Risk							
Implementation Difficulty (Short Term Risk/Permitting)	✓✓	✓✓✓	✓✓✓	✓✓✓	✓✓✓	✓✓✓	✓✓✓
Long Term Risk/Reliability/Regulatory Concerns	✓✓✓	✓✓✓	✓✓	✓✓✓	✓✓	✓✓✓	✓✓✓
Timing							
Piloting/Testing/Corrosion Control Study	2	3	3	2	NONE	3	3
Schedule of Implementation	2	2	3	3	2	3	3

Source: EEI 11/15/21

Lake Michigan vs Radium Treatment

Alternative/Cost Parameter	CLCJAWA Lake Michigan	WRT Radium Treatment
Estimated Capital Cost (Today's dollars)	$59M to $69M	$66M to $76M
Internal Village Distribution System Improvements (Today's dollars)	$29M to $36M	$15M to $18M
Total Capital cost (Today's dollars)	$88M - $105M	$81M to $94M
Total Cost Escalated to Mid Point of Construction	**$111M-$132M**	**$102M- $119M**
Estimated Additional Annual Maintenance or Connection Fee Cost	Connection Fee $22M over 30 years or $744K/YR	Estimated additional $1M/YR for WRT, Radium waste license, O&M, etc.
System Cost changes	- O&M savings $800K-$1.1 M/yr + CLCJAWA water usage charge ($1.80/1000 gallons) $1.1 M/yr	No O&M savings from current operations Capital replacement of existing wells, pumps etc. (CIP)

Radium Treatment Risks & Items Not in Costs

- System requires pilot testing to make sure it works*
- Regulatory review and schedule impacts
- Higher O&M costs
- New systems likely require to hire more staff to O&M
- Continues to leave Village with radium waste
- Single supplier/vendor (WRT)
- Does not address source water sustainability

Alternative to Lake Michigan: Radium Selective Media Pretreatment

- Water Remediation Technology (WRT) pretreatment
- Three new wells/plants, upgrades at two existing plants
- Does not address source water sustainability
- Requires:
  - Leasing equipment from proprietary vendor WRT
  - Generating hazardous waste
  - Acquiring Radioactive Materials License
  - Pilot testing
  - Technology does not work with barium in wells, which is present in groundwater supplies

Source: https://www.wrtnet.com/radium

Long Term Viability of Current Source

- Groundwater Supply White Paper by Baxter & Woodman (Nov 2011) based on ISWS data
  - Projected water demand is increasing for Lake Zurich and surrounding areas that rely on the same aquifer
  - Regional water levels on the deep sandstone aquifer are dropping and expected to continue to drop
  - **Concludes that groundwater is not perpetually sustainable for long term use for Lake Zurich**

Advantages to CLCJAWA Lake Michigan Partnership

- Addresses groundwater supply concerns
- No radium or barium waste
- Eliminates risk of proprietary vendor
- Does not require pilot testing
- Reduces uncertainty in future regulations
- Agency shared responsibility for water treatment/future regulations
- Voting Member of world class Lake Michigan supplier
- Reduced future O&M costs
- Operational efficiencies

Next Steps

- Nov. 18, 2023: FY 2024 Budget Workshop
- Nov. 20, 2023: Continued discussion at Board meeting
- Dec. 6, 2023: Adopt FY 2024 Budget at Board meeting

  Adopt 5-year Lake Michigan capital charge ordinance*
- Jan. 2024: Implement LM capital charge ($3/1000g)
- Spring 2024: **Board approval of IEPA loan***

  Board approval of CLCJAWA Membership Agreement*

  Begin engineering, easement acquisition, permits

Next Steps

- Nov. 2024: Referendum on half-cent non-home rule sales tax
- Dec. 2024: **Board amendment to LM capital charge schedule (if NHRST referendum approved)***
- 2025: Engineering, easement acquisition, permits, bidding
- 2026-2027: Construction
- 2028: Transition to Lake Michigan completed

  Debt service begins

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