



500 West Big Beaver
Troy, MI 48084
troymi.gov

CITY COUNCIL AGENDA ITEM

Date: September 8, 2020



To: Mark F. Miller, City Manager

From: Robert J. Bruner, Assistant City Manager
Rob Maleszyk, Chief Financial Officer
Lisa Burnham, Controller
Kurt Bovensiep, Public Works Director
Dennis Trantham, Facilities and Grounds Operations Manager
MaryBeth Murz, Purchasing Manager

Subject: Budget Amendment and Standard Purchasing Resolution 4 – Oakland County
Purchasing Cooperative – City Hall Domestic Hot Water Boiler

History

- The domestic hot water boiler, tank and circulation pumps at City Hall were installed in 1978.
- The storage tank failed the week of August 17, 2020.
- Replacement of this unit was identified in the Facilities Condition Assessment and Analysis.
- The replacement was not budgeted as it was contingent on the results of the City Hall Programmatic Assessment
- Recommended replacement is a tankless hot water system.
- The tankless hot water systems is projected to use 40% less energy than its equivalent in a boiler/storage tank application.
- The Return on Investment (ROI) on the incremental cost difference between a traditional boiler/storage tank system and a tankless system was performed. The ROI revealed in year 8 the additional cost would have been recovered.

Purchasing

- Pricing for the Tankless Hot Water System has been secured from *Limbach Inc. of Pontiac, MI* through the Oakland County Cooperative Contract #005013.
- City Council authorized participation in the Cooperative Purchasing Programs on November 11, 2019 (Resolution #2008-03-086-F-4c).

Financial

The acquisition will require a budget appropriation amendment in the amount of \$45,630 for the Building Operations City Hall Capital Projects Fund for the 2021 fiscal year. Expenditures will be charged to 401.264.265.7975.045.



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Recommendation

City management recommends awarding a contract to *Limbach Inc. of Pontiac, MI* for the installation of a tankless hot water system at Troy City Hall for an estimated total of \$41,482 with a 10% contingency for a not to exceed amount of \$45,630, as detailed in the attached quote and as per the Oakland County Purchasing Cooperative Contract #005013. It is also recommended that the City Council approve a budget amendment to the Capital Account in the amount of \$45,630. The award is contingent upon the contractor's submission of properly executed insurance documents and all other specified requirements.

City of Troy
500 West Big Beaver Road,
Troy, MI 48084

August 28, 2020

Project: (1) Domestic Hot Water Retrofit

Limbach Co. is pleased to provide you with a proposal for the following specific scope of work, qualifications, and exclusions:

Scope of Work:

This proposal is based on the following scope of work:

Provide all necessary tools, equipment, materials, and labor to perform the following:

- Isolate the existing tank from water.
- Provide environmental testing of the piping insulation.
- If required provide abatement of 50 lineal feet of piping.
- Drain the remaining tank of water.
- Remove the existing tank from the space.
- Provide and install (1) a new tankless water heater.
- Provide all necessary piping to connect the existing piping to the new water heater.
- Provide and install new venting for the new water heater.
- Reconnect the new water heater to the existing gas supply.
- Reconnect the new water heater to the existing electrical supply.
- Provide and install (2) new boiler emergency stop switches at the entrances of the mechanical room.
- Return system to operation and verify operation of the unit.
- Dispose of all failed components.

Also Included

- All hoisting and rigging
- Deliveries
- Test, Check & Start for proper operations

926 FEATHERSTONE ROAD
PONTIAC, MI 48342

P: 248-391-1411 | F: 248-975-5860 | limbachinc.com

LIMBACH IS AN EQUAL OPPORTUNITY EMPLOYER



MECHANICAL



ELECTRICAL



PLUMBING



CONTROLS

Qualifications

1. It is assumed that all additional existing equipment, controls, and piping, isolation valves, ductwork, and other systems are in proper working condition and do not require repair, replacement, or rehabilitation.
2. Owner to facilitate adequate access to the building during the installation.
3. All work to be performed using Union personnel.
4. Limbach's proposal is subject to a thorough review of scope, price, and schedule; and to mutually agreeable terms and conditions of the contract.
5. **The pricing provided is based on the Oakland County Cooperative Contract 005013.**
6. **This pricing includes environmental testing of the piping insulation.**

Exclusions: (Other than stated in the above scope of work)

1. Removal or relocation of conflicting services, utilities, lights, or sprinklers.
2. Other repairs needed that are found on the existing system during the installation.
3. Temporary utilities or HVAC.
4. Permit/Permit fees – available upon request
5. Diagnostic Service Call
6. **Electrical**
7. **Painting**
8. **Taxes**

Total Investment for the above scope of work - \$38,350.00

If abatement is required please add - \$1,955.00

For (2) Return Pumps please add - \$1,177.00

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CONTROLS

Financial Analysis of Efficiency Improvements

Simulating Streams of Cash Inflows and Outflows

Troy DHW retrofit Direct replacement vs Condensing Ta

Discount Rate:	10%
Finance Rate:	10%
Reinvestment Rate:	10%
Inflation Rate:	3%

	Today	End of YR 1	End of YR 2	End of YR 3	End of YR 4	End of YR 5	End of YR 6	End of YR 7	End of YR 8	End of YR 9	End of YR 10
Date:	0	1	2	3	4	5	6	7	8	9	10

CASH OUTFLOWS (after Date 0 rebates)

Single investment	\$	(12,254)																		
Phased investment																				
Financed investment																				
Subtotal	\$	(12,254)	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-
Rebate/incentive rec'd at Date 0 ¹	\$	1,126																		
SUBTOTAL OUTFLOWS	\$	(11,128)	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-

CASH INFLOWS

Energy savings		\$	1,600	\$	1,648	\$	1,697	\$	1,748	\$	1,801	\$	1,855	\$	1,910	\$	1,968	\$	2,027	\$	2,088	
Maintenance savings		\$	500	\$	515	\$	530	\$	546	\$	563	\$	580	\$	597	\$	615	\$	633	\$	652	
Rebates/incentives considered "cash inflow" ¹																						
SUBTOTAL INFLOWS	\$	-	\$	2,100	\$	2,163	\$	2,228	\$	2,295	\$	2,364	\$	2,434	\$	2,508	\$	2,583	\$	2,660	\$	2,740

Annual Cash Flow	\$	(11,128)	\$	2,100	\$	2,163	\$	2,228	\$	2,295	\$	2,364	\$	2,434	\$	2,508	\$	2,583	\$	2,660	\$	2,740
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<i>PV of Outflows (for SIR calculation)</i>	\$	(11,128)	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-
<i>PV of Inflows (for SIR calculation)</i>	\$	-	\$	1,909	\$	1,788	\$	1,674	\$	1,567	\$	1,468	\$	1,374	\$	1,287	\$	1,205	\$	1,128	\$	1,056

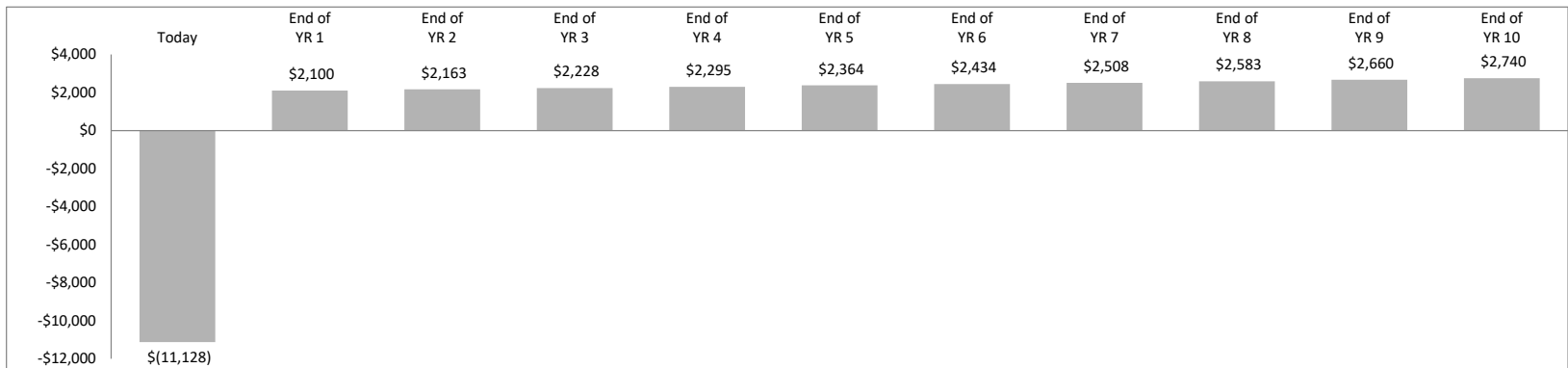
Annual Present Value	(\$11,128)	\$1,909	\$1,788	\$1,674	\$1,567	\$1,468	\$1,374	\$1,287	\$1,205	\$1,128	\$1,056
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NOTE THAT CERTAIN RETURNS VARY DEPENDING ON THE LENGTH OF THE ANALYSIS TERM											
	10-YEAR	1-YEAR	2-YEAR	3-YEAR	4-YEAR	5-YEAR	6-YEAR	7-YEAR	8-YEAR	9-YEAR	10-YEAR
NPV	\$ 3,328	(\$9,219)	(\$7,431)	(\$5,757)	(\$4,190)	(\$2,723)	(\$1,348)	(\$62)	\$1,143	\$2,271	\$3,328
SPP	5.3										
ROI	18.9%										
IRR	16.2%	-81.1%	-45.5%	-22.6%	-8.7%	0.1%	5.9%	9.8%	12.7%	14.7%	16.2%
MIRR	12.9%	-81.1%	-36.6%	-13.7%	-2.3%	4.0%	7.7%	9.9%	11.4%	12.3%	12.9%
SIR	1.3	0.2	0.3	0.5	0.6	0.8	0.9	1.0	1.1	1.2	1.3

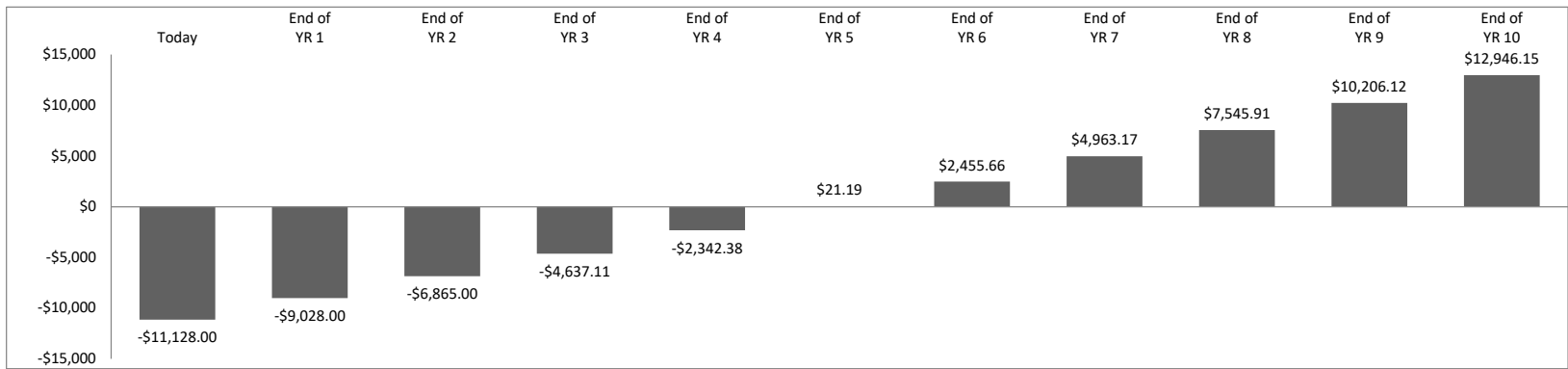
NOTE 1: SIR calc removes any rebate/incentive received at Date 0 from first cost prior to calculating SIR.

Analysis is based on incremental differential cost of options considered

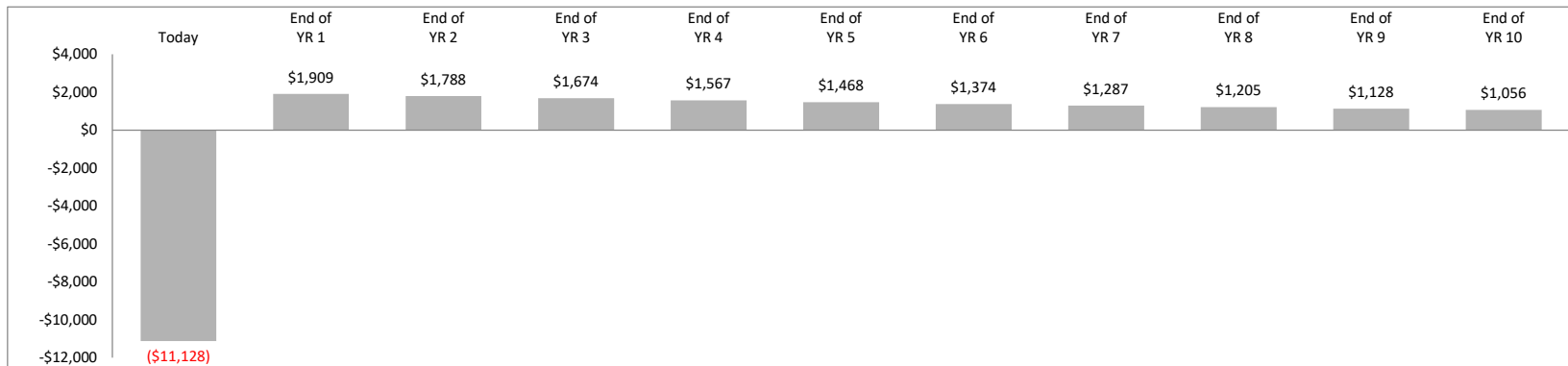
10-year Cash Flow



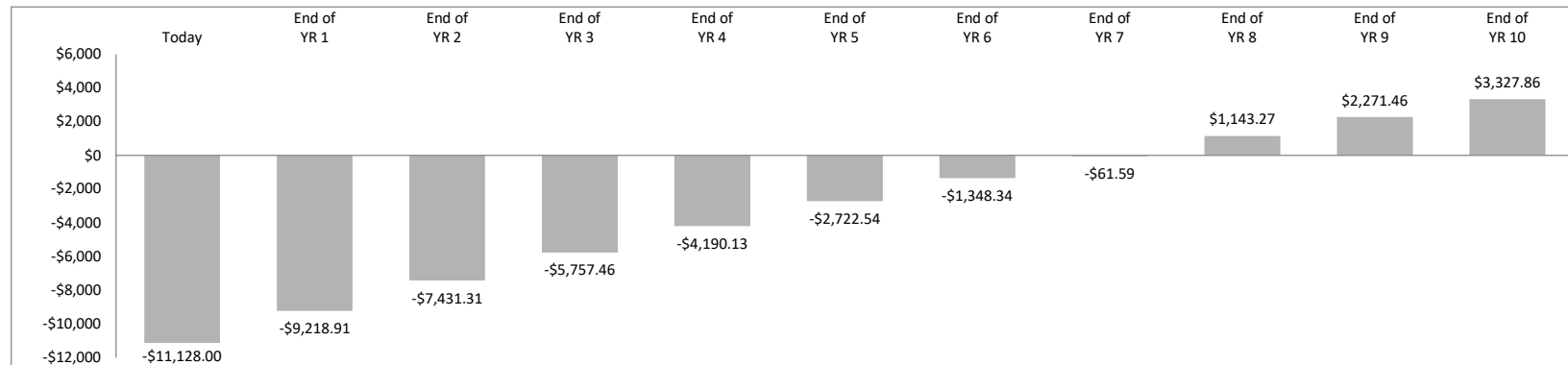
Cumulative 10-year Cash Flow



10-year Present Value



Cumulative 10-year Present Value





08-31-2020

To
Alan H Deal
Troy, MI 48150

Dear Alan H Deal,
Thank you for considering Intellihot to be your source for unlimited and efficient hot water. We have reengineered these units from ground up (backed by 28 patents) to outperform and outlast competitive products.

For your project, City of Troy, the following parameters were received as the inputs for this design:

- **Application Type:** Office / Retail
- **# of Units:** 500
- **System Type:** 1
- **Inlet Temperature:** 40 (Degrees)
- **Outlet Temperature:** 130 (Degrees)
- **Fuel Cost (\$/Therm):** \$0.80

Based on the above information we estimate an equivalent Intellihot system to consist of:

- **Estimated water usage (per day):**
1000 (Gallons)
- **Estimated therms used per year for existing system:**
4976 (Therms)
- **Estimated therms used per year for Intellihot system:**
2975 (Therms)
- **Estimated operational cost savings per year with Intellihot system:**
\$1600.80

Thank you for the opportunity to serve you. If you have any questions, please do not hesitate contact me.

Sincerely,

Jason Smith
Applications Engineer
jsmith@intellihot.com
309-740-0823

sales@intellihot.com | 1-877-835-1705

www.intellihot.com

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