

## **City Administrator & Staff Update**

#### 2024.03.01

• IISC: Potential exciting opportunity! If you recall, last year we were in the running for the University of Iowa's Institute for Sustainable Communities program that would bring students and professors (could be around 150) in planning, engineering, and potentially several other fields to the community to work on any number of projects, planning efforts, housing efforts/programs, economic development, wayfinding, marketing, and organizational efforts, etc. Please take a look at the website again and also this new arc GIS story map from one recent community. This could help us accomplish a lot in a shorter time frame that with the staffing and contractors wea re able to bring to the table a present. I have worked with the IISC before and believe this to be an outstanding program much different than other programs you may have seen. I am willing to put in the time and effort to make this successful and we would want to pull in other volunteers, community nonprofits, etc. and ideally yourselves. This has the potential to have a dramatic impact on our organization and community! I think we have a good opportunity to participate but as always...we keep trying!

Website: <a href="https://iisc.uiowa.edu/">https://iisc.uiowa.edu/</a>

Projects: <a href="https://iisc.uiowa.edu/projects">https://iisc.uiowa.edu/projects</a>

Communities: https://iisc.uiowa.edu/communities

Story Map:

https://storymaps.arcgis.com/stories/f76833c53ce24996bc664f8e9f4f6572

- **RAGBRAI:** The Advisory Committee met last night with RAGBRAI to kick things off with representatives from RAGBRAI, discuss the route, committees, etc. The Mall and Kohl's are being considered for parking locations (and potential camping, but this would be minimal as the last city on the route.
  - Volunteers are needed, please let me know if you want to discuss!
- **CivicPlus:** We are kicking off the website update on March 6<sup>th</sup> with CivicPlus.
- Franchise Fee City List: Attached is a list of Burlington's comparable cities, tax rates and franchise fees as well as a Franchise Fee list from the State of Iowa that Burlington had used. Just some additional info.
- Water: Along with the above, Councilmember Lees noted that the city could consider removing the \$1 Capital Project Fee from the water bill if the franchise fee was adopted. This currently generates around \$20-21,000/year.
- Planning & Zoning: Two Items...

- REIF: (Per Kelly) I hope everyone is doing well. We have received a request from Reif Oil to allow the construction of an RV park next to the 34 Truck Stop. Currently, the City Code does not permit this type of use in an I-3 Zoning District. We need to meet to decide if we want to allow this type of use within the city limits and, if so, how to regulate it. If you know of any cities that have RV parks within their city limits, let me know and we can check to see if they have city codes that regulate this type of use.
- Commission: In January we added some new faces to the Commission. Current Members are:
  - Mike Davis
  - Kathy Newberry
  - Karen Dewey, Chairman
  - Joe Rector, Vice-Chairman
  - Mary Storch
  - Sandy Lee
  - Blake Ruther, P&Z Representative on the Board of Adjustment
- Miller-Meeks Appropriation: The Office of Rep. Miller-Meeks (IA-01) is now accepting
  Appropriation Requests and Community Project Funding Applications for Fiscal Year
  2025. All programmatic appropriations requests and community project applications must
  be submitted to the below links by 6:00pm EST on Friday, March 15, 2024.
  - o Resolution and Letters of Support being prepped for next week.
- **Shive:** DC and Miller Meeks Met with Chad and Nick with Burlington to start laying the program and materials out. Working with SEIRPC, Shive, and others to prepare documentation. Final plan for the 24" Force Main study included/attached.

#### IT (Newberry)

- This week it is monthly statistic time again.
- I was asked to explain the statistics in google analytics So I will do my best. On the first report for google analytics we can see that we have 1K users visit our site during this time. When looking at how the users got to our site below you can see a majority came from a search engine. Then it looks like the second highest amount came from typing in our URL direct and social media being third. You can also see where the users are coming from by country. The darker shades mean more users are coming from those locations. Note that while google analytics does its best to include web crawlers as users, they don't get all of them. Another interesting section is the views by page title. We can see here that our home page itself has the most views. Followed by the Police Departments landing Page second. The second report is our user retention report. These are our returning users that come back. We can see that we had 121 returning users over the course of the last 30 days. I have also attached the Bitdefender Gravity Zone report. From the data we can see that we had 20 detections for a virus. Most of them were from one user trying to open the same infected document several times. We also had one known phishing link that was blocked from the user accessing it. Under the incident status we can see that it blocked 3 attacks. These are

not infections but determined based of an algorithm on what it deems as malicious. In this case it blocked the 3 attempts. If it didn't block them, we would see them under requires investigation. From this we can also see that all events happened on workstations, and we had no events happen on our servers. Last month's report even had a block for ransomware, so I feel Bitdefender has paid for itself. The next report I have for you is the Barracuda Report. The reason I include this is so that people see that the software is working, and we are getting what we pay for. From here we can see the inbound blocked by user. This would be the incoming spam and malicious email. This is the top ten users. The outbound blocked would-be users who have been blocked and the most common cause would be Personal Information contained within the email. If personal information is detected it will block the email. Under threats/virus found we can see it didn't find any viruses however artificial intelligence has found 23 advanced threats that it had detected and blocked. This would be where you get an email saying barracuda has detected a targeted attack. Under last blocked ATP you will see the files that were blocked most recently. If there are other statistics, you would like to see from me please ask.

• If you have any questions about my update this week, feel free to reach out to me.

### Police/Fire (Logan)

- I received 3 quotes for the Generator at the Fire Station. Dave Bessine Electric was the low bidder for the project.
- Busy day had 1 auto-aid call to Burlington for a House fire, mutual aid call to Mediapolis for a House fire and Mutual aid call in the county for a timber fire.
- Several issues over the past few weeks with squad car maintenance. Really need to look into this and the potential in the next two years to replace squad cars.
- Having some issues with our fill station to fill our air packs. We have it approved for a new system next budget year. I'm going to look through the bids we received and see what the time frame is of getting them in. I want to get them ordered soon so they can be installed and paid for after July 1st but want to get it done asap.

#### **Building (Crooks)**

Here is my weekly update.

- 1. Completed inspection and issued business license for REMAX move.
- 2. Completed weekly meetings with iWorQ to continue work on the web portals.
- 3. Continuing to work and build the rental inspection sheets within iWorQ.
- 4. Issued one building permit for new siding.
- 5. Continued working on code enforcement. There have been 24 nuisance notices issued for the month of February. Seven of those remain active with various stages of corrections, or property owners having reached out to me with a plan to correct. Violations include unsafe buildings, fallen tree limbs, junk and/or cars in the yard.

a. I am working on multiple properties with ongoing code violations. Those property owners will begin to be notified early next week.

#### Finance (Moore)

- I entered everything on the Department of Management Portal for the Fiscal Year 2024-2025 Budget after the final budget work session on February 15.
- I have been getting caught up on other job duties (monthly deposits, projects, etc.), emails, and anything that you have needed me to do.
- I also coordinated with the WBFD Association to set up a special breakfast Saturday morning for the <u>WB boys basketball team</u> before they head off to State Sunday afternoon.

## **Public Works (Brissey)**

- Water lab
- Sewer lab
- Lift station rounds.
- Parks and Broadway trash and recycling
- Locates.
- Service trucks and Squad cars.
- OSHA training
- Training on how to get fuel from Burlington, received access keys, etc.
- Sign maintenance.
- Backhoe training.
- Building maintenance and clean up.
- Working on budget
- Street sweeping
- Manhole repair
- Working on water valve replacement
- Dirt work
- Pouring concrete back from valve replacement

# West Burlington West Lift Station Force Main



Facility Plan
December 2023



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# 1.0 Summary

## 1.1 General

The West Lift Station receives flows from the portion of the City north of Highway 34 and on average conveys approximately 60% of the wastewater flows that are treated at the WWTP. The lift station pumps such flows through a 2.1-mile-long force main originally constructed in 1984. The force main is 24-inch diameter ductile iron pipe.

All flows received at the WWTP are pumped from the West Lift Station and the South Lift Station. The South Lift Station connects to the force main approximately 2,000 linear feet upstream of the WWTP. As such, a portion of the force main conveys all wastewater flows to the WWTP.

Due to age and condition, the City of West Burlington is planning improvements to the West Lift Station Force Main. Timing of improvements will depend on funding as well as degree of maintenance and repairs required for continued operation.

## 1.2 Force Main Replacement

To maintain lift station operation during construction, the overall concept is to replace the West Lift Station force main with a new pipeline and associated structures. The existing force main will be abandoned in place. The new force main is planned to be a 20-inch, PVC pressure rated pipe and supports a design, firm pumping capacity of 4,500 gpm from the West Lift Station in its current configuration.

Budgetary construction cost for replacement of the force main is \$5.4 million.

Assuming 20% for permitting, geotechnical, survey, engineering, administrative, legal, and financial advisor, total implementation cost is upwards of \$6.5 million.

## 1.3 Potential Phasing

From an evaluation of available information, certain areas of the existing force main show signs of deterioration and are at higher risk of corrosion. These areas are generally at higher points of the force main where corrosive gases can build and attack the crown of the pipe. Examples of these areas are stretches of the existing force main where the three existing air release valves are located. However, available information also suggests that certain areas of the pipeline are in good condition and have remaining service life. An example of this is south of Division Street, where the force main was tapped for connection from the South Lift Station in 2020.

Considering the above discussion, replacing the force main in phases may be a reasonable approach, and would allow the City to continue learn more about actual conditions of the existing pipeline, complete smaller projects while gaining continued use of the existing asset that can support operations; and help fund the project.

Number and timing of phases will be dependent on several factors. However, consideration is given to a first phase where segments of pipeline showing corrosion and are at higher risk for such would be replaced. Two segments of force main along South Gear Avenue are candidates for this first phase.

- Roughly from air release valve at Huston Street to the air release valve at the entrance to Target. In Appendix A, this segment would from pipeline Station 16+00 to Station 31+00.
- Roughly from air release valve near Forrest Avenue to West Agency Road. In appendix A, this segment would from pipeline Segment 54+00 to pipeline Station 64+00.



Budgetary construction cost for the Phase 1 Improvements is \$1.4 million, with total implementation cost upwards of \$1.7 million.

# 2.0 Existing Conditions

#### 2.1 Service Area

Appendix A shows the service area for the West Lift Station, which in general consists of the area within city limits and north of US Highway 34. The West Lift Station receives gravity sewer flows and flows from five lift stations. The lift stations are listed in the table below.

Name	Location
East	521 E. Mt Pleasant Steet
Brushtown	910 Brushtown Road
West 2	1600 W. Mount Pleasant Street
Emerald Glen	1810 Emerald Drive
West 3	3300 W. Mount Pleasant Street

#### 2.2 West Lift Station

#### 2.2.1 General

The West Lift Station is a triplex, dry-pit type lift station. The piping and valves were replaced in 2012.

#### **2.2.2** Pumps

The existing pumps are each rated for 2,650 gpm at 100-feet total dynamic head (TDH), fitted with 125 HP motors and variable speed drives. A representative pump performance curve is provided in Appendix A.

Typical set points for the pumps are summarized below.

Stage	Pump Operation	Wet Well Water Depth, ft.	Pump Speed Range
1	One Pump ON	3.5 – 4.8	66% - 83%
2	Two Pumps ON	5.3 – 5.5	75% - 100%
3	Three Pumps ON	>5.5	80% - 100%

The controls are set to start one pump when the water depth in the wet well reaches 3.5 feet and then adjust the speed of the pump between 66% and 83% in relation to the water levels in the wet well. When the depth of water in the wet well reaches 5.3 feet, a second pump starts, and the



pump speed adjusts between 75% and 100% in relation to the water level range. If the water depth in the wet well continues to rise, the third pump starts, and speed adjust with water levels. The controls are also set to alternate lead and lag pumps to share run times between the three pumps.

## 2.2.3 Operation

Operational records for the West Lift Station were somewhat limited; however, data from September 1, 2021, through December 31, 2022, were available. Data included the daily runtimes of each pump, total runtime for each day; and daily volume of water pumped that is captured from a mag meter dedicated to the facility.

Condition	Lift Station Daily Pump Time, hrs.	Lift Station Daily Flow, MGD
Average	3.5	0.381
75 Percentile	4.0	0.448
98 Percentile	10.0	1.12
Max	18.9	1.97

From the data, the maximum runtime of record is questionable – the data indicates the lift station only pumped 0.295 MG of water in the 18.9 hours, which equates to a nominal 260 gpm rate. However, other data shows run time in the 15-to-17-hour range under higher daily flows. As shown, the lift station predominantly pumps less than 10 hours per day. The data also indicates the runtime between pumps is more or less equal:

	Pump Runtimes, hrs. per day		
Condition	Pump 1	Pump 2	Pump 3
Average	1.2	1.2	1.1
75 Percentile	1.4	1.3	1.3
98 Percentile	3.7	3.2	3.1

As an estimate of lift station typical pumping rate, the volume of water pumped each day was divided by the total lift station runtime hours for that day. The results are summarized below.

Condition	Nominal Lift Station Pumping Rate, gpm
Average	1,810
75 Percentile	1,853



98 Percentile	2,114
Max	2,759

The maximum pump rate of the record occurred on September 11, 2022. On that day, records show the lift station pumped 0.596 MG in a pump runtime of 3.6 hours. The data also indicates that the next highest station pumping rates were 2,367 gpm and 2,357 gpm. On a nominal basis, one pump's design capacity (2,650 gpm) predominantly covers current flows. However, under peak flows, two pumps are needed, but at reduced speed.

#### 2.3 Force Main

## 2.3.1 Pipeline

The West Lift Station Force Main was constructed in 1984 and is a 24-inch ductile iron pipeline, extending from the lift station on Mt. Pleasant Street through a drainage swale to Huston Street where it crosses South Gear Avenue. The force main continues on the west side of South Gear Avenue, under US Highway 34 to Agency Road where it crosses to the east side of the road. It continues on the east side of South Gear to approximately 1,100 feet south of Division Street where it turns to the west and continues in a permanent easement to the wastewater treatment plant (WWTP). At the location 1,100 feet south of Division Street, the 12-inch force main from the South Lift Station connects to the 24-inch force main. The overall force main route is shown Appendix A.

The existing pipeline is cased in three locations:

- Across Highway US 34 westbound entrance ramp (approximately 145 linear feet of 36inch diameter casing);
- 2. Across Highway US 34 (approximately 190 linear feet of 36-inch diameter casing);
- 3. Across West Agency Road (approximately 100 linear feet, assumed to be 36-inch diameter casing).

#### **Pipeline Desktop Assessment**

Due to a break that occurred in the force main in 2017 as well as condition of the pipe at the air release valves, there is concern of remaining service life of the force main. In 2022, an evaluation of the force main was performed based on available information and experience of City staff. Below is a summary of the conclusions from the evaluation:

- The pipeline has served the City for 38 years. Nominal lifespan for force mains is 25-50 years, but can vary due to a host of factors.
- A major break in 2017 caused an emergency repair. The City has taken steps, such a stock piling pipe and fittings for 24-inch pipe, in case another break is experienced.
- At the break as well as at the air release valves, the crown of the pipe shows internal
  corrosion, with a likely culprit being hydrogen sulfide collecting at high points along the
  pipeline. Approximately 20% of the pipeline was identified as having a concern for
  internal corrosion.
- Originally, the pipeline had three air release valve stations. Since that time, one station
  has been permanently abandoned (filled with concrete), while the other two stations
  have valves needing to be replaced (see discussion in the next section).



 Sections of the pipe excavated for construction purposes – connection of the South Lift Station in 2020 as well as valve and pipe replacement at the West Lift Station in 2012 – show signs that the force main is in good condition in some areas. Both of these examples are representative of lower points in the pipeline, as opposed to higher points where corrosive gases can accumulate.

#### **Pipeline Field Assessment**

Field assessment and testing of the pipeline was discussed during the 2022 evaluation. Options included:

- Option 1: External Ultrasonic Testing: The pipeline would be excavated in two (2) to four (4) locations for ultrasonic testing of pipe wall thickness. The concept was to excavate in areas of the highest concern for corrosion, for example near the location of the 2017 break and near the location of the air lift valve(s). For this option, the pipe would need to be exposed at the testing location, about three (3) feet pipe cleaned and surface prepped for testing. Data would yield the pipe thickness at the test location and general area for estimating pipe condition and service life. Budgetary cost was on the order of \$14 thousand, plus excavation and pipe cleaning/preparation costs.
- Option 2 Internal Acoustic Testing: For this option, Pure Technologies, Xylem Smart Ball Inspection was considered. The 4" diameter Smart Ball is inserted into the force main, migrates down the force main while the lift station is pumping, and collects data to locate gas pockets and leaks. Using that information, Pure Technologies would select up to five (5) locations for ultrasonic pipe thickness testing. The data is used along with their data base of other pipelines to prepare a report that discusses pipe condition, expected useful life and to make recommendations for repairs. Budgetary pricing was on the order of \$100 thousand plus excavation and pipe cleaning for the ultrasonic testing.
- Option 3 Smart Pigging: For this option, two tools offered by American Pipeline Solutions was considered. One was the Smart Foam Tool, which is inserted into the force main and is pumped/forced down the length of the pipeline while recording data to identify gas pocket locations, leak locations and liner condition. It can also detect anomalies in the pipe thickness of more than 10%. The second tool Aquarius Tool is similar in being a smart pigging device capturing the data mentioned above, plus can measure pipe thickness. Prior to the test APS would clean the force main with pigging devices. With data from the inspection APS would prepare a report that discusses findings and gives a lift expectancy for the pipe. Budgetary cost for the Smart Foam Tool testing was on the order of \$200 thousand, while the testing with the Aquarius Tool was on the order of \$300 thousand, plus cost for providing launching and recovery provisions. The tools need at least a 12" diameter launching spot, which is not readily available, as well as a provisions to protect the mag meter near the plant and recover the tool.
- Option 4 Smart Robot: This option capturing wall thickness from smart devices that can travel internally the length of the pipeline, but more flexible than a pigging tool. It considered Pure Technologies, Xylem Pipe Diver Inspection which can be inserted into the force main, free-swimming, and migrate through fittings and valves, and is more easily launched and recovered. The tool provides information about pipe wall thickness, distress, and thickness loss. A budgetary cost was not received for this option, but from a testing viewpoint, it would be more expensive than Option 2 discussed above (more than \$100 thousand).



Due to cost, field testing of the force main was not furthered pursued.

#### 2.3.2 Air Valves

The Force Main originally had three (3) combination air release and air vacuum valves (air valves) at high points along the force main housed within manholes. The air valve locations and conditions are summarized below, and locations are shown in Appendix A.

- Huston Street and South Gear Avenue At an unknown date, this valve location was abandoned, presumably due to valve failure, and the manhole was filled with concrete.
- South Gear Avenue and Target Entrance This air valve failed in October 2022. City staff replaced the valve and added a ball valve on top of the gate valve because the gate valve does not close properly.
- South Gear Avenue and Forrest Avenue This air valve is near the end of its service life and City staff have plans to replace the valve as part of O&M. City staff are preparing the material and provisions for the valve replacement as well as confirming material on hand for pipe repair, if needed, during valve replacement.

# 3.0 Proposed Improvements

#### 3.1. General

Overall, the existing West Lift Station Force Main will need to be replaced. However, the timing of replacement is still being considered. The approach and timing of replacement will depend on funding, but also, could be impacted by another pipeline break and the degree of such a break, amount of piping that would need to be repaired, etc. With that in mind, the following is a concept for pipeline replacement.

In the interim of the facility plan and design, additional flow and/or pump operation data from West Lift Station as well as survey and similar data would be beneficial. The details of such a data request will be discussed with the City separate from the facility plan, but mentioned here as a reminder that design criteria may change as additional data is collected.

# 3.2 Design Concept

#### 3.2.1 Criteria

The following criteria are targeted for replacing the force main:

- Be compatible with the existing West Lift Station and pumps.
- New force main pipe: AWWA C900 PVC, DR 18, 235 psi class.
- In general, the force main will be replaced starting in the yard of the West Lift Station, conceptually downstream of the existing mag meter and bypass pumping connection.
  The flow meter and bypass pumping connection were constructed in 2012 as part of West Lift Station improvements, and the piping and valves upstream of these were also replaced or modified. Condition of the pipe was reported to be in good condition.
- For the section of pipe dedicated to the West Lift Station (approximately 9,150 linear feet), the force main will be replaced with 20-inch diameter piping. Smaller diameter pipe as compared to the existing force main is proposed to overall increase flow velocity (as



compared to today) and targeting 2 feet per second at around 1,800 gpm (current average).

- For the section of the force main serving both the West Lift Station and South Lift Station (approximately 2,000 linear feet), maintain 24-inch diameter pipe.
- Overall, approximately 11,150 linear feet of force main will be replaced.
- Provide new air valve manholes where appropriate based on the new pipeline profile.
- Consider a range of head conditions, including:
  - Lower Head Conditions: New pipe (C factor of 150); lower static head low water level in the splitter box at the WWTP, higher water levels in the West Lift Station – and the South Lift Station not running.
  - Average Head Conditions: Aged pipe (C factor of 135), "mid"-range static head; one pump concurrently running at the South Lift Station.
  - Higher Head Conditions: Old pipe (C factor of 125); high static head; and two pumps concurrently running at the South Lift Station.
- The existing force main will be abandoned in place.

#### 3.2.3 Routing

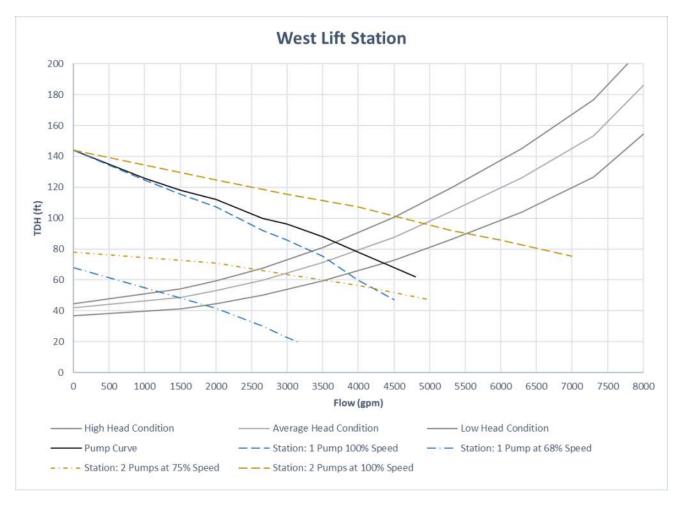
In general, the new pipeline will be placed in parallel with the existing force main and will follow the route along South Gear Avenue. As an initial basis, it is assumed the existing Highway crossing, which is cased, will be used, but the force main replaced. Actual alignment will be identified in design and may vary depending on right-of-way, other utilities, and/or avoiding other conflicts.

Alternatives for redundancy in the Highway crossing as well as other provisions are discussed in a following section.

## 3.2.4 Capacity

With the concept for replacing the force main discussed above, the capacity of the West Lift Station is summarized below assuming existing pumps and similar control set points as current.





For the purpose of discussion and permitting, higher head conditions (as previsouly defined) are considred, which would represent a future condition for the proposed force main. In this view point, the force main replacement concept supports the West Lift Station capacity of 4,500 gpm (6.48 MGD) at 100-feet total head (future, higher head conditions). The current peak hour flow at the lift station is unknown, but for consideration:

- Assuming peak hour flows could be 2.5 times maximum day flows, equates to the West Lift Station supporting 2.59 MGD on a max day flow basis (6.48 MGD divided by 2.5 = 2.59 MGD).
- Current max day flow of record at the West Lift Station is 1.97 mgd.
- Future growth allowance of approxiamtely 30% on a max day basis (2.59 MGD divided by 1.97 MGD = 131%).

# 3.3 Budgetary Construction Cost

A budgetary opinion of probable construction cost for replacing the force main as one project is on the order of \$5.4 million, and includes:

 Preliminary opinion of cost for providing and installing the force main, air valve manholes, and tieins to existing facilities.



- Mark-up of 15% for contractor overhead and profit.
- A 30% contingency to help account for variables such as: final construction scope to be further
  defined as the project progresses through design and permitting; unknown subsurface conditions;
  potential conflicts with other utilities; bidding and construction timing and market conditions;
  volatility in labor rates, fuel prices, and material costs; and overall inflationary environment.

# 4.0 Potential Phasing

#### 4.1. General

From the desk top evaluation of available information, there are certain areas of the existing force main that have signs of deterioration and are at risk, namely at high points where corrosive gases can attack the crown of the pipe. Other areas of the pipe, where the pipeline stays fully submerged, has been found in good condition during construction or other activities that has exposed the pipe for connections and modifications. As such, phasing may be a reasonable approach to replacing the force main. The goal would be to replace the force main in sections, so pipe segments at the end of their service life or at higher risk are replaced while taking advantage of the remaining service life available in other sections.

Actual phasing can be impacted by where breaks or pipe failures are experienced (should they occur); conditions found during construction of the phases or repairs; locating pipe in reasonable condition to allow new segments to be connected; degree of redundancy planned or targeted; and available funding to accomplish a given phase.

The following phasing plan was considered with the goal of:

- <u>Phase 1</u>: Addressing areas where pipeline deterioration has been noticed and/or areas of higher concern; as well as, provide air valve structures at the higher locations of the pipeline. The force main in this phase would replace two segments of the pipeline along South Gear Avenue and replace existing air release valves:
  - Approximately from air release valve at Huston Street to the air release valve at the entrance to Target. In Appendix A, this segment would from pipeline Station 16+00 to Station 31+00.
  - Approximately from air release valve near Forrest Avenue to West Agency Road. In appendix A, this segment would from pipeline Segment 54+00 to pipeline Station 64+00.
- Phase 2: Replace the force main across US Highway 34, which combined with Phase 1, would extend new force main along South Gear Avenue from Huston Street to West Agency Road. In Appendix A, this segment would be from pipeline Station 31+00 to pipeline Station 54+00.
- <u>Phase 3</u>: Replace force main from Huston Street to the West Lift Station, which would provide new force main from the lift station to West Agency Road. In Appendix A, this segment is from the Lift Station to pipeline Station 16+00.
- Phase 4: Replace the force main from West Agency Road to the WWTP.

## 4.2 Budgetary Construction Cost

Phasing the force main replacement could add 5% to 10% (or more) additional cost to the project. The actual cost impact depends on the number of phases, overall implementation schedule; inflation;



provisions for future redundancy; etc. For the phasing plan described previously, and assuming around a five-year implementation plan, the opinion of cost is summarized below. As previously mentioned, the order in which phases are completed may change depending on the condition of the existing pipe found during construction; location of future breaks, should they occur; and timing of available funding. However, Phase 1, as defined within this report, seems an appropriate first step as it addresses the higher risk areas of the existing force main and where corrosion and pipeline break have been noticed.

Phase	Description	Budgetary Cost Opinion
1	Replace pipeline (and air release valves) in areas of higher concern and risk: Station 16+00 to 31+00 and Station 54+00 to 64+00	\$1.4 Million
2	Replace force main across US Highway 34: Station 31+00 to 54+00	\$1.2 Million
3	Replace pipeline to West Lift Station: Lift Station to Station 16+00	\$0.8 Million
4	Extend force main replacement to the WWTP: Station 64+00 to the WWTP	\$2.4 Million

# 5.0 Potential Redundancy

### 5.1 General

The West Lift Station, on average, conveys approximately 60% of the total flow to the WWTP and is currently served by a single force main. In one light, the single force main has served the City well for over 35 years. In the other light, the majority of wastewater service to the City is reliant on a single pipeline. The force main's importance is even more critical downstream of the connection to the South Lift Station, where the single force main conveys all the flows to the WWTP. As such, three alternatives were considered to increase redundancy when replacing the West Lift Station Force Main:

Alternative 1: Parallel Pipe to the WWTP: As mentioned above, a portion of the force main conveys the flows from the West Lift Station and the South Lift Station, which represent the total flow to the WWTP. For this alternative, consideration is given to providing a parallel pipeline for the portion of force main that conveys the total flow to the WWTP:

- Replace the force main with a new pipeline from the West Lift Station to the point that the South Lift Station connects to the force main, as in the base concept.
- Replace the pipeline at the South Lift Station connection point to the WWTP, as in the base concept. Except, with redundancy and parallel operation, an 18-inch diameter pipe (in lieu of 24-inch) may be appropriate.
- Rehabilitate the existing pipe with structural lining, slip-lining; or pipe bursting to operate in parallel with the new pipe.
- Connect the two pipelines to operate in parallel with valving to allow isolation for maintenance.



Alternative 2: West Lift Station Partial Parallel Force Main: This alternative builds on Alternative 1 by providing parallel pipelines north and south of US Highway 34 for the West Lift Station. It utilizes the existing US Highway 34 crossings, although the actual force main piping will be replaced, they will remain as single pipeline crossings. With this alternative, a parallel pipeline would be available for the West Lift Station and the WWTP, except at the Highway crossing:

- Replace the force main with a new pipeline from the West Lift Station to the point that the South Lift connects to the force main, as in the base concept. Considering parallel operation, a 16-inch diameter pipe could be used, except at the Highway crossings.
- Rehabilitate (line, slip-line, or pipe burst) the existing force main north and south of US
  Highway 34 for a parallel pipeline. Provide valve and connections for parallel operation (and
  isolation) at the West Lift Station and each side of the US Highway 34 crossings.
- Provide parallel pipelines from the South Lift Station connection point to the WWTP as in Alternative 1.

Alternative 3: West Lift Station Parallel Force Main: This alternative builds on Alternative 1 and Alternative 2 by providing parallel pipelines across US Highway 34. The new pipeline would require boring and jacking a casing pipe across Highway 34 for the new force main. It would also involve the most interconnections and valves to be able to take full advantage of the redundancy and flexibility. However, this alternative provides two routes to continue conveying wastewater from the West Lift Station to the WWTP, even with one pipeline offline for repair, cleaning, or other maintenance.

A primary goal is to replace the existing force main as it reaches the end of its service life for continued wastewater service to the northern part of the City. Further, the importance of redundancy should be weighed with other needs of the City and the system; and demands on available funds. In this light, a new pipeline could be constructed for the purpose of continued basic service, while the existing force main is abandoned in place. The abandoned pipe could be rehabilitated or slipped-lined for a parallel force main in the future, as funding and system needs allow.

# **5.1 Comparative Construction Cost**

To help evaluate the redundancy alternatives, below are opinion of construction costs that can be compared to the base project presented in Section 3.0 (\$5.4 million for replacement of the force main as one project):

Alternative	Name	Description	Budgetary Cost Opinion
1	Parallel Pipeline to the WWTP	Replace force main from West Lift Station to the WWTP; Rehabilitate a portion of existing pipe that serves both the West and South Lift Stations and connect to new force main for parallel operation.	\$5.9 Million
2	West Lift Station Partial Parallel Pipeline	Replace force main from West Lift Station to the WWTP; Rehabilitate existing pipeline and connect to new force main for parallel operation, except at US Highway 34 crossings. Existing Highway 34 Crossing will be used (single pipeline crossings).	\$7.9 Million
3	West Lift Station Parallel Force Main	Replace force main from West Lift Station to the WWTP; provide new US Highway 34 Crossing(s); Rehabilitate existing pipeline and connect to new force main for parallel operation.	\$9.4 Million



On a budgetary cost basis, Alternative 1 – Parallel Pipeline to the WWTP – would be approximately 10% additional cost as compared to the base project and is worth additional consideration. The investment would buy redundancy in the segment of pipe that conveys all wastewater flows to the WWTP. The other alternatives are worth consideration but would require a significant additional investment. As previously mentioned, the investment in redundancy should weighed against other needs of the City and the wastewater system. Redundancy could be added to the system in the future, once the primary goal of replacing segments of the existing force main that are at the end of their service is completed.

## 6.0 Funding

#### 6.1 General

Funding options for the project that have been discussed with the City include:

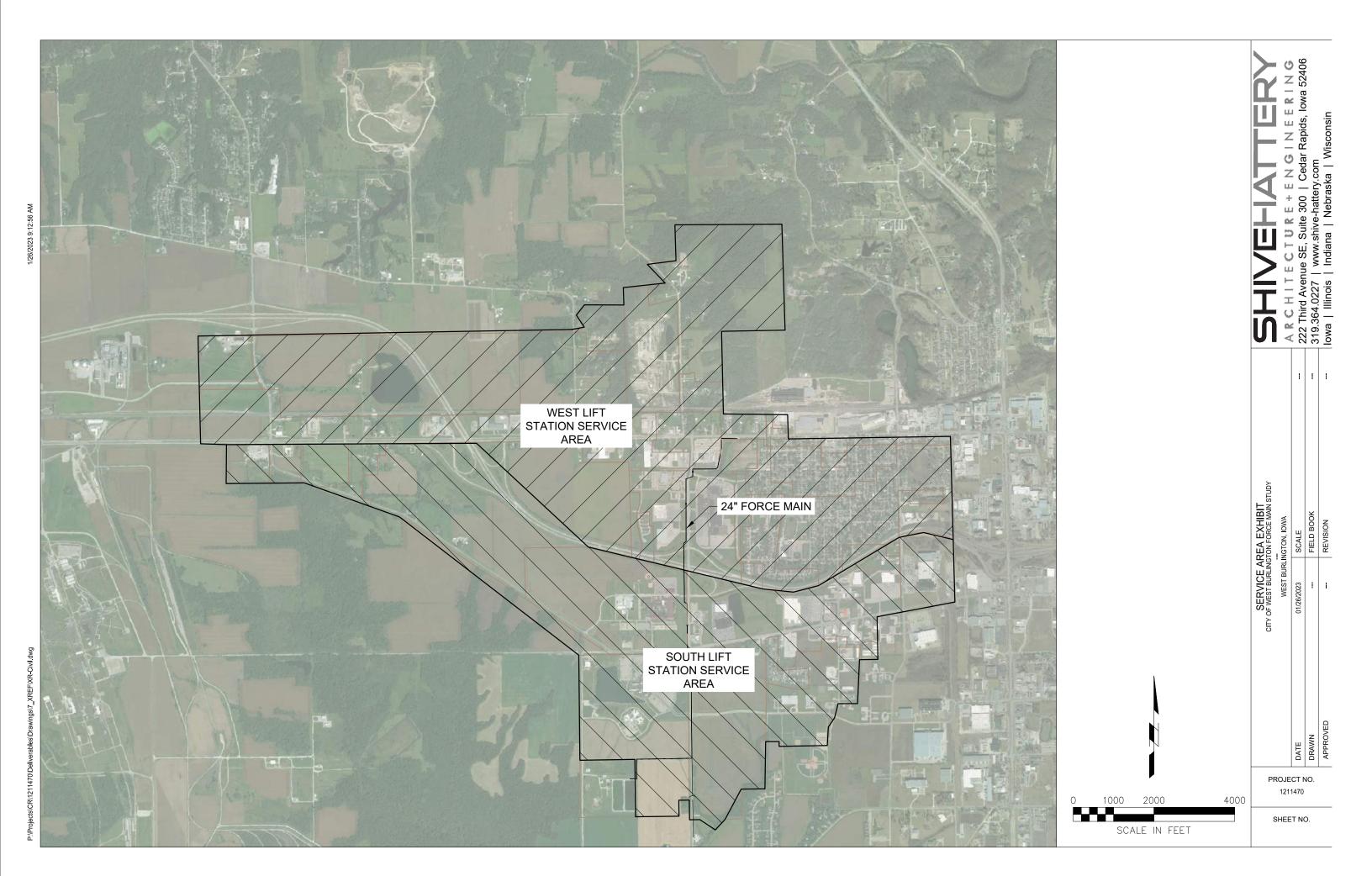
- Clean Water State Revolving Fund (SRF): Low interest rate loans administered by Iowa DNR and Iowa Finance Authority for wastewater projects.
- SRF Bipartisan Infrastructure Law (BIL). As part of the BIL, additional funding was awarded
  to SRF programs to help finance water and wastewater infrastructure projects. In general
  terms, eligible and qualifying projects funded through SRF can be awarded a certain amount
  of loan forgiveness, which for new projects would occur at the SRF loan closing.
- USDA Rural Development: Low interest rate loans and grants for communities with a
  population of less than 10,000. In general, low interest loans are available for funding of
  qualified projects; and USDA considers "reasonable" user costs to potentially award a grant
  to cover a portion of the costs of the project.
- Community Development Block Grant (CDBG): Program to help finance projects serving low-to-moderate income (LMI) communities. Eligibility is based on the project serving communities or neighborhoods with at least 51% LMI. The current CDBG American Survey Data lists West Burlington at 49.3% LMI, which is fairly close to the threshold. A community survey may be worthwhile if this funding source is pursued.
- The City is also discussing Community Project Funding options with Iowa's US Representative.
- In some cases, the funding options above can be combined on one project.

Each of the programs has their own requirements for applying for funding; planning and design requirements; and certain requirements for construction - ranging from type of construction contract, to prevailing labor rates to US source of iron, steel, and construction materials. However, meeting the requirements is a known process.



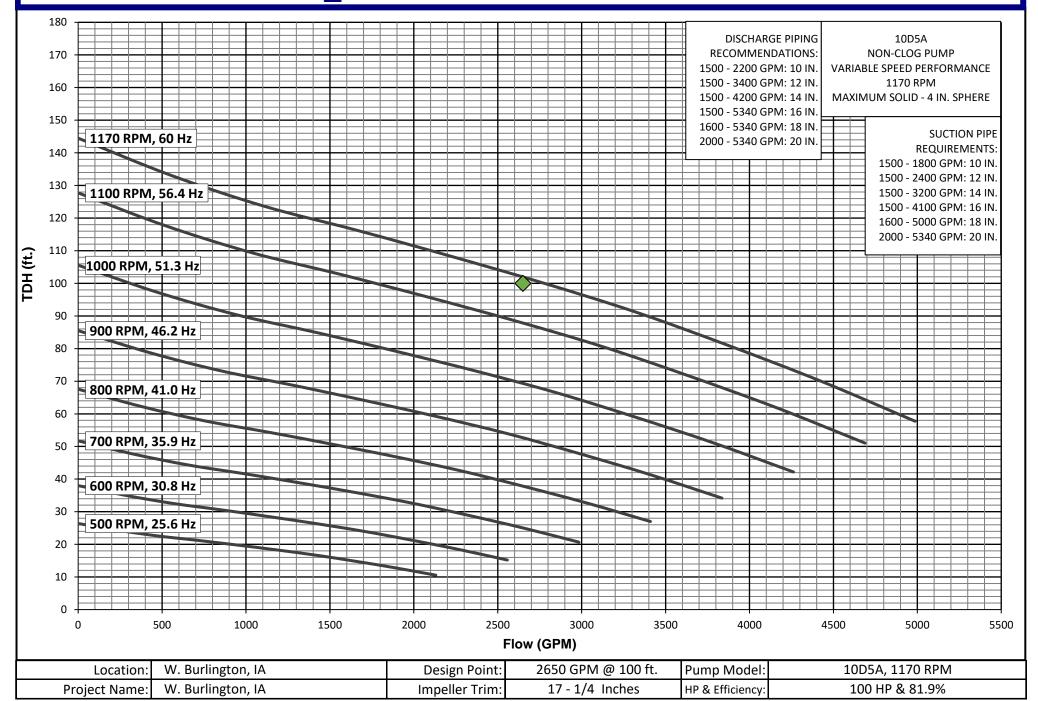
# **Appendix A**





# Pump Curve





## **Iowa Community Franchise Fees**

May 5, 2021

1. Ackley 1% (electric) and 1% (gas)

2. Akron 5% (gas)

3. Albert City 3% (electric) and 3% (gas)

4. Alburnett 1% (electric) and 1% (gas)

5. Algona 5% (electric) and 5% (gas)

6. Alleman 5% (electric) and 5% (gas)

7. Altoona 5% (electric) and 5% (gas)

8. Anamosa 2% (electric) and 2% (gas)

9. Ankeny 2% (electric) and 2% (gas)

10. Armstrong 5% (electric) and 5% (gas)

11. Arnolds Park 1% (electric) and 1% (gas)

12. Asbury 1% (electric) and 1% (gas)

13. Audubon 5% (electric) and 5% (gas)

14. Beacon 1% (electric) and 1% (gas)

15. Bellevue 5% (electric) and 5% (gas)

16. Blakesburg 1% (electric)

17. Blanchard 3% (electric)

18. Boone 1% (electric) and 1% (gas)

19. Boxholm 1% (gas)

20. Boyden 5% residential; 5% commercial; 5% industrial (electric and gas)

21. Brandon 5% (electric) and 5% (gas)

22. Calmar 3% (electric) and 3% (gas)

23. Camanche 2% (gas)

**24. Carlisle 4% (electric)** \*only applies to MidAmerican Energy customers

25. Carroll 1% (electric)

26. Cedar Rapids 3% (electric) and 3% (gas)

27. Center Point 3% (electric) and 3% (gas)

28. Centerville 3% (electric) and 3% (gas)

29. Central City 5% (electric) and 5% (gas)

30. Chariton	1% (electric) and 1% (gas)
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31. Cherokee 5% (electric) and 5% (gas)

32. Chillicothe 1% (electric)

33. Churdan 2% (electric)

34. Cincinnati 2% (electric) and 2% (gas)

35. Clarion 5% (electric) and 5% (gas)

36. Clinton 4% (electric) and 4% (gas)

37. Clive 5% (electric) and 5% (gas)

38. Clutier 2% (electric)

39. Coggon 1% (gas)

40. Colfax 5% (electric) and 5% (gas)

41. Collins 3% (electric) and 3% (gas)

42. Conway 1% (electric)

43. Coralville 1% (electric) and 1% (gas)

44. Council Bluffs 2% (electric) and 2% (gas)

45. Creston 1% (electric) and 1% (gas)

46. Danbury 3% (electric) and 3% (gas)

47. Decatur City 5% (electric)

48. Decorah 1% (gas) and 2% (electric)

1% (gas) and 3% (electric) \*effective July 1, 2021 1% (gas) and 4% (electric) \*effective July 1, 2022

49. Delhi 5% (electric) and 5% (gas)

50. Des Moines 5% (electric) and 5% (gas)

51. Dolliver 1% (electric)

52. Donnellson 4% (electric) and 4% (gas)

53. Dubuque 5% (electric) and 5% (gas)

54. Durant 5% (gas)

55. Dyersville 1% (electric) and 1% (gas)

56. Early 3% (electric) and 4% (gas)

57. Eddyville 1% (electric)

58. Eldon 2% (electric) and 2% (gas)

59. Eldora 2% (electric) and 2% (gas)

60. Elkader 5% (gas)

61. Ellston 1% (electric)

62. Ely 1% (electric) and 1% (gas)

63. Everly 1% (electric)

64. Exline 2.5% (electric)

65. Fayette 1% (electric) and 1% (gas)

66. Fonda 2% (gas)

67. Fort Atkinson 5% (electric)

68. Fruitland 1% (gas)

69. Garnavillo 3% (electric) and 3% (gas)

70. Garwin 1% (electric) and 1% (gas)

71. Glenwood 5% (electric) and 5% (gas)

72. Greenville 1% (electric)

73. Grinnell 4% (electric) and 4% (gas)

74. Griswold 3% (electric) and 3% (gas)

75. Gruver 2% (electric)

76. Hampton 5% (electric) and 5% (gas)

77. Harris 3% (electric),

78. Hartford 5% (electric) and 5% (gas)

79. Hastings 5% (electric)

80. Hawkeye 5% (electric) and 5% (gas)

81. Hazleton 1% (electric) and 1% (gas)

82. Hiawatha 3% (electric) and 3% (gas)

83. Hubbard 1% (electric) and 1% (gas)

84. Hull 5% residential; 1.5% commercial; 1.5% industrial; (electric and gas)

85. Huxley 3% (electric) and 3% (gas)

86. Independence 5% (gas)

87. Indianola 5% (electric) and 5% (gas)

88. Inwood 5% (electric and gas – residential) 3% (electric and gas – non-residential)

89. Iowa City 1% (electric) and 1% (gas)

90. Iowa Falls 2.5% (electric) and 2.5% (gas)

91. Ireton 5% (electric)

92. Keystone 1% (electric) and 1% (gas)

93. Knoxville 5% (electric) and 5% (gas)

94. Lake City 3% (electric) and 3% (gas)

95. Lakota 4% (electric) and 4% (gas)

96. Lamont 4% (gas)

97. Lansing 3% (electric)

98. Lawler 5% (electric)

99. Ledyard 5% (electric) and 5% (gas)

100. Lewis 4% (electric)

101. Libertyville 1% (electric) and 1% (gas)

102. Lincoln 1% (electric)

103. Logan 5% residential; 2% business; (electric and gas)

104. Lohrville 3% (electric) and 3% (gas)

105. Lone Rock 1% (electric) and 1% (gas)

106. Luana 1% (electric) and 1% (gas)

107. Luxemburg 1% (electric)

108. Lytton 4% (gas)

109. Madrid 1% (electric) and 1% (gas)

110. Malcom 2% (electric) and 2% (gas)

111. Mallard 1% (electric)

112. Manchester 3% (electric) and 3% (gas)

113. Marathon 5% (gas)

114. Marengo 3% (electric) and 3% (gas)

115. Marion 4% (electric)

116. Maxwell 2% (electric) and 2% (gas)

117.	Melbourne	1% (electric) and 1% (gas)
118.	Melcher-Dallas	4% (electric and gas)
119.	Melvin	5% (electric)
120.	Millersburg	1% (electric)
121.	Milton	1% (electric)
122.	Missouri Valley	1% (electric) and 1% (gas)
123.	Mitchellville	3% (electric) and 3% (gas)
124.	Monticello	3% (electric) and 3% (gas)
125.	Moravia	1% (electric) and 1% (gas)
126.	Moulton	1% (electric)
127.	Mount Vernon	5% (electric) and 5% (gas)
128.	Muscatine	2% (gas)
129.	Murray	5% (electric)
130.	Mystic	1% (electric)
131.	New Providence	1.5% (electric) and 1.5% (gas)
132.	New Vienna	1% (electric)
133.	New Virginia	3% (electric) and 3% (gas)
134.	Norway	3% (electric) and 3% (gas)
135.	Numa	1% (electric)
136.	Oakland	1% (electric)
137.	Ocheyedan	1% (electric)
138.	Oelwein	5% (electric) and 5% (gas)
139.	Ogden	1% (gas)
140.	Onslow	2% (electric)
141.	Osceola	2% (electric) and 2% (gas)
142.	Oskaloosa	3% (electric) and 3% (gas)
143.	Ossian	2% (electric) and 2% (gas)
144.	Parnell	2% (electric) and 2% (gas)
145.	Peosta	1% (electric) and 1% (gas)

2% (electric) and 2% (gas)

146. Perry

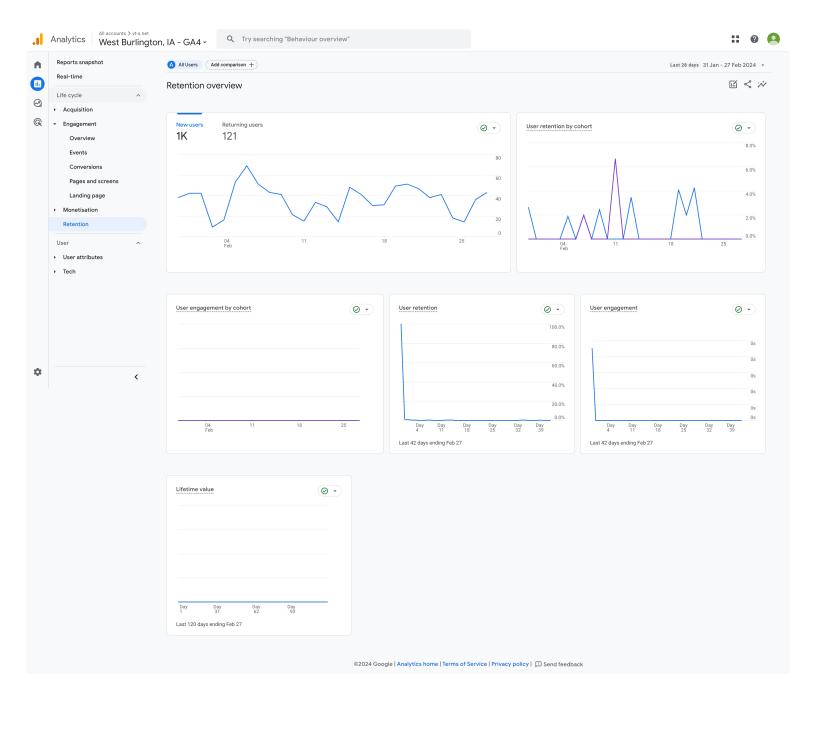
147	Plano	1% (electric)
17/.	i iaiio	1 /0 (616/611/67

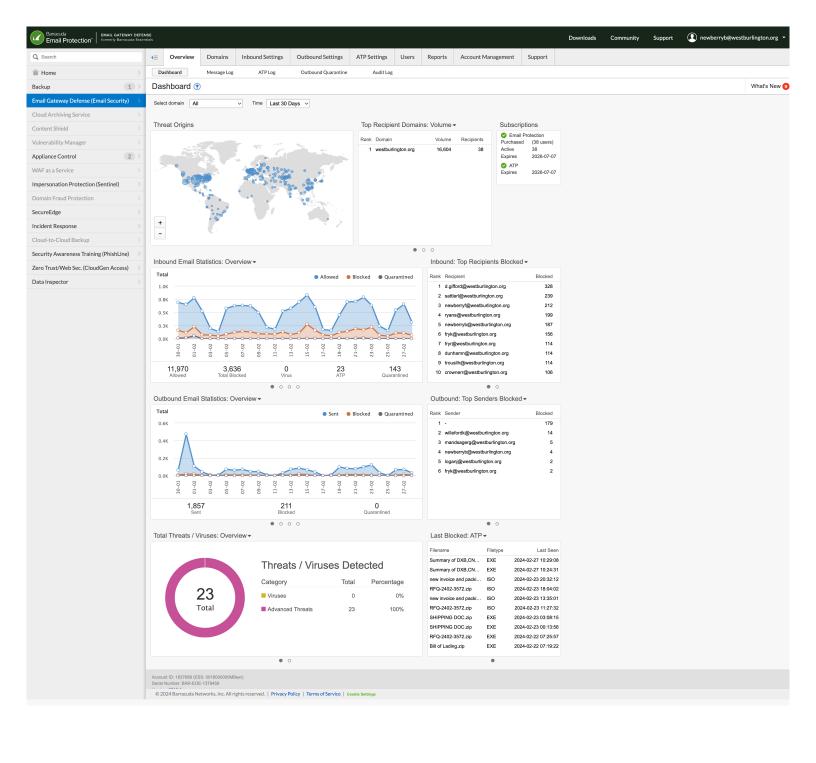
148.	Pleasant Hill	5% (electric) and 5% (gas)

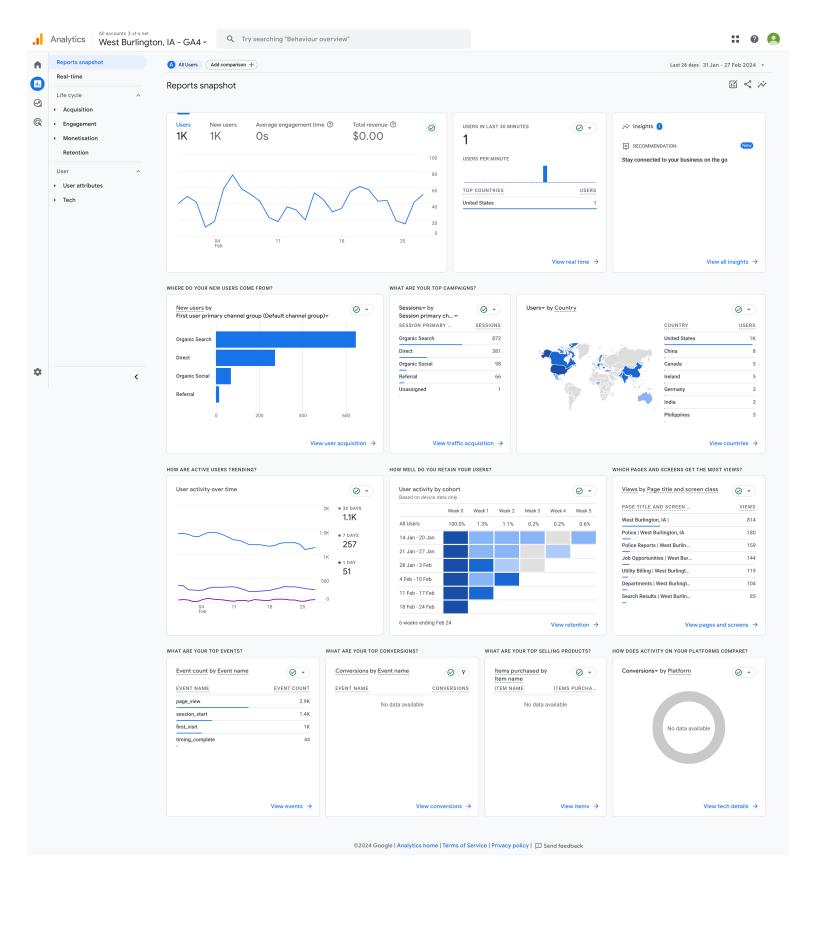
- 149. Pleasant Plain 1% (electric)
- 150. Plover 1% (electric)
- 151. Prairieburg 1% (electric)
- 152. Prairie City 1% (electric) and 1% (gas)
- 153. Rembrandt 2% (electric) and 2% (gas)
- 154. Rock Valley 5% (electric) and 5% (gas)
- 155. Rolfe 1% (electric)
- 156. Rossie 1% (electric)
- 157. Royal 2% (electric)
- 158. Russell 2% (electric)
- 159. Ryan 5% (electric) and 5% (gas)
- 160. Searsboro 1% (electric)
- 161. Sergeant Bluff 5% (electric) 5% (gas) residential; 3% (electric and gas) non-residential
- 162. Sharpsburg 1% (electric)
- 163. Shenandoah 5% (electric) and 5% (gas)
- 164. Sibley 3% (gas)
- 165. Sigourney 2% (electric) and 2% (gas)
- 166. Sioux City 5% (electric) and 5% (gas)
- 167. Sioux Rapids 5% (electric) and 5% (gas)
- 168. Springville 1% (electric) and 1% (gas)
- 169. Somers 5% (electric)
- 170. Spirit Lake 3% (electric) \*effective January 1, 2021
- 171. Stacyville 5% (electric) and 5% (gas)
- 172. Steamboat Rock 1% (electric) and 1% (gas)
- 173. St. Lucas 1% (electric)
- 174. Storm Lake 5% (electric) and 5% (gas)
- 175. Story City 1% (gas)

176.	Strawberry Point	2% (gas)
177.	Superior	3% (electric) *effective January 1, 2021
178.	Sutherland	3% (electric) and 3% (gas)
179.	Swea City	5% (electric) and 5% (gas)
180.	Tabor	5% (electric) and 5% (gas)
181.	Tama	1% (electric)
182.	Terril	1% (electric)
183.	Thornburg	1% (electric)
184.	Tiffin	1% (gas)
185.	Titonka	3% (electric)
186.	Toledo	1% (electric) and 1% (gas)
187.	Tripoli	1% (electric) *effective January 1, 2021
188.	Unionville	1% (electric)
189.	Van Meter	5% (electric) and 5% (gas)
190.	Victor	1% (electric) and 1% (gas)
191.	Vinton	1% (gas)
192.	Wahpeton	2% (electric)
193.	Walker	1% (electric) and 1% (gas)
194.	Waterloo	4% (electric) and 4% (gas)
195.	Waukon	3% (electric) 3% (gas)
196.	Webb	4% (electric) 5% (electric) *effective July 1, 2021
197.	Wellsburg	3% (electric) and 3% (gas)
198.	Wesley	1% (electric) and 1% (gas)
199.	West Okoboji	1% (electric) and 1% (gas)
200.	West Union	1% (electric) and 1% (gas)
201.	What Cheer	1% (electric) and 1% (gas)
202.	Whitten	2% (electric) and 2% (gas)
203.	Williamsburg	1% (electric) and 1% (gas)
204.	Williamson	1% (electric) and 1% (gas)

205. Windsor Heights 5% residential; 3% business (electric and gas)







	Census		Taxable Value for FY 22/23	1	Taxable Value per Capita	FY	22/23 Total Levy	FY 2	22/23 General Fund Levy	FY 2	22/23 Debt Service Levy	Ta	ox Collection Based on Levy FY 22/23	Tax Per Capita		TIF Increment	Tif Increment Percentage	Franchise Fee
Dubuque	59,667	\$	2,695,861,021	\$	45,182	s	9.72	\$	8.10	\$	0.02	\$	25,574,621	\$ 429	s	465,473,429	14.724%	5%
Ames	66,427	\$	3,399,701,391	\$	51,180	\$	9.83	\$	5.51	\$	3.07	\$	33,537,181	\$ 505	s	57,260,674	1.656%	¥
Ankeny	67,887	\$	4,476,429,489	\$	65,939	\$	9.90	\$	6.15	s	3.05	\$	45,079,675	\$ 664	s	351,261,236	7.276%	2%
Urbandale	45,580	\$	3,518,662,058	\$	77,198	\$	10.01	\$	8.10	s	1.44	\$	34,292,383	\$ 752	5	329,438,244	8.561%	
Johnston	24,064	5	1,562,531,127	\$	64,932	\$	10.68	8	7.61	s	2.33	\$	17,064,556	\$ 709	s	380,823,493	19.596%	
West Des Moines	68,723	5	5,879,585,882	\$	85,555	\$	10.95	\$	8.10	\$	1.91	\$	65,288,243	\$ 950	s	875,531,002	12.961%	- 2
North Liberty	20,479	\$	1,051,996,465	\$	51,370	\$	11.32	\$	8.10	s	1.22	\$	12,073,848	\$ 590	s	170,693,182	13.960%	*
Cedar Falls	40,713	\$	2,064,620,691	\$	50,712	s	11.51	\$	8.10	\$	0.47	\$	23,906,560	\$ 587	s	204,625,917	9.017%	42
Bettendorf	39,102	\$	2,667,136,438	\$	68,210	\$	12.65	\$	5.72	\$	4.85	\$	33,694,943	\$ 862	s	146,631,337	5.211%	*
Waukee	23,940	\$	1,435,992,893	\$	59,983	\$	13.10	\$	7.70	\$	3.32	\$	19,652,698	\$ 821	\$	264,317,559	15.545%	*
Mason City	27,338	\$	1,252,464,277	\$	45,814	\$	14.00	\$	8.10	\$	2.53	\$	17,280,920	\$ 632	\$	45,849,345	3.531%	- 8
Marion	41,535	\$	1,876,093,949	\$	45,169	8	14.20	\$	8.10	\$	2.04	\$	26,752,619	\$ 644	s	142,155,154	7.043%	4%
Coralville	22,318	\$	1,448,714,637	\$	64,912	\$	14.31	\$	8.10	\$	2.12	\$	21,845,074	\$ 979	s	522,112,616	26.492%	1%
Clinton	24,469	\$	1,018,078,415	\$	41,607	s	15.29	\$	8.10	s	1.51	\$	14,521,418	\$ 593	s	9,173,990	0.893%	4%
Marshalltown	27,591	\$	925,979,613	\$	33,561	\$	15.36	\$	8.10	\$	0.84	\$	12,999,858	\$ 471	\$	13,036,223	1,388%	- 6
Sioux City	85,797	\$	3,284,864,638	\$	38,286	\$	15.42	\$	8.10	s	4.03	\$	51,153,256	\$ 596	s	506,605,777	13.362%	5%
Burlington	23,982	\$	761,838,383	\$	31,767	\$	15.44	\$	8.10	ŝ	3.80	\$	12,001,793	\$ 500	s	102,002,288	11.808%	7
lowa City	74,828	\$	4,241,061,964	\$	56,677	s	15.63	\$	8.10	8	2.48	\$	66,474,472	\$ 888	s	133,492,758	3.052%	1%
Muscatine	23,797	\$	943,579,044	\$	39,651	\$	15.97	\$	8.10	s	2.20	\$	15,185,562	\$ 638	s	73,349,252	7.213%	2%
Cedar Rapids	137,710	\$	7,221,270,520	\$	52,438	\$	16.03	\$	8.10	\$	3.40	\$	113,538,197	\$ 824	s	598,095,411	7.649%	3%
Des Moines	214,133	5	8,934,448,462	\$	41,724	\$	16.61	\$	8.10	s	2.91	\$	150,148,496	\$ 701	s	1,178,078,385	11.650%	5%
Davenport	101,724	5	4,976,226,877	\$	48,919	\$	16.78	\$	8.10	\$	2.05	\$	81,595,081	\$ 802	5	216,395,538	4.167%	- 8
Council Bluffs	62,799	\$	3,220,798,982	\$	51,287	\$	17.83	\$	8.10	s	2.82	\$	54,334,142	\$ 865	s	104,382,274	3.139%	2%
Waterloo	67,314	\$	2,389,932,778	\$	35,504	s	18.97	\$	8.10	\$	2.88	\$	44,829,472	\$ 666	s	339,815,284	12.449%	4%
Fort Dodge	24,871	\$	792,391,990	\$	31,860	\$	20.10	\$	8.10	\$	4.46	\$	15,416,645	\$ 620	s	79,092,182	9.076%	
Ottumwa	25,529	5	679,001,735		26,597	*	21.22		8.10		4.30		14,225,542	557	5	41,602,187	5.773%	

