



Fairhaven Board of Selectmen

Meeting Minutes

April 28, 2020

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FAIRHAVEN,
MASS.

Present: Chairman Charles Murphy, Town Administrator Mark Rees, Public Works Superintendent Vinnie Furtado, Town Clerk Carolyn Hurley and Cable Access Director Derek Frates

Present via Zoom: Selectman Robert Espindola, Selectman Daniel Freitas, Finance Director Wendy Graves, Health Agent Mary Kellogg, Town Moderator Mark Sylvia, Board of Public Works member Frank Coelho, Administrative Assistant Vicki Oliveira, and Cable Access Production Coordinator Erick Sa.

The meeting was videotaped on Cable Access and Zoom meeting application.

Chairman Murphy opened the meeting at 4:02 pm and read the following statement:

"This Open Meeting of the Fairhaven Board of Selectmen is being conducted remotely consistent with Governor Baker's Executive Order of March 12, 2020, due to the current State of Emergency in the Commonwealth due to the outbreak of the "COVID-19 Virus."

In order to mitigate the transmission of the COVID-19 Virus, we have been advised and directed by the Commonwealth to suspend public gatherings, and as such, the Governor's Order suspends the requirement of the Open Meeting Law to have all meetings in a publicly accessible physical location. Further, all members of public bodies are allowed and encouraged to participate remotely.

The Order, which you can find posted with agenda materials for this meeting allows public bodies to meet entirely remotely so long as reasonable public access is afforded so that the public can follow along with the deliberations of the meeting.

Ensuring public access does not ensure public participation unless such participation is required by law. This meeting will allow public comment related to the posted agenda items only. For this meeting, Fairhaven Board of Selectmen is convening by telephone conference/video conference via Zoom App as posted on the Town's Website identifying how the public may join."

Roll Call was taken for all participants

MOMENT OF SILENCE

Mr. Murphy offered a moment of silence for former Hastings Junior High Principal John Haaland Jr., the Town Accountant's father in law Arsenio Carreiro, Chairman Murphy's Father in law Louis Carreiro, and residents Ryan Tolman and Jason Walton, who all passed away over the past few weeks.

MINUTES

Mr. Espindola made a motion to approve the minutes of April 9, 2020, Open Session. Mr. Freitas seconded. Vote was unanimous. (3-0)

Mr. Espindola made a motion to approve the minutes of April 13, 2020, Executive Session. Mr. Freitas seconded. Vote was unanimous. (3-0)

TOWN ADMINISTRATORS REPORT

Mr. Rees updated the Board that the Municipal Vulnerability Preparedness (MVP) Planning and Action grants summary of findings is under review and moving forward. This study is grant funded and once approved will allow the Town for construction grants and operational funds for the Town.

SRPEDD has issued a preliminary truck analysis for Benoit Square but does not appear favorable so Planning Director Paul Foley will be reviewing this a little closer before it is finalized.

Waterways regulations are under review with Town Council and will be before the Board for comments.

The Town received a request from Wayne Oliveira for \$800 from the Route 6 Median account to purchase some equipment and supplies for the cleaning and weeding of the route 6 median which was approved.

COMMITTEE LIAISON REPORTS

Mr. Espindola updated the Board about his meeting with SRPEDD regarding the Flood Plain insurance. At that meeting it was learned that all 31 communities that are affected by this must all take action in order to get special insurance for residents. This is already on the Town meeting warrant to update the flood plain maps for the town.

Mr. Espindola said the electric aggregation was approved for another 3 years and will start January 2020.

Mr. Espindola said the Broadband Study Committee will be sending out a survey to gather information on residents' cable/internet/phone bills.

Mr. Murphy said he is getting weekly updates from the Sister City Committee.

BOARD OF SELECTMEN/ TOWN ADMINISTRATOR ANNUAL REPORT

Mr. Rees reviewed the annual report for 2019 which will be included in the annual town report. Mr. Espindola made a motion to accept the Board of Selectmen/ Town Administrator's 2019 annual report. Mr. Freitas seconded. Vote was unanimous. (3-0)

Roll Call vote: Mr. Murphy in favor, Mr. Espindola in favor, Mr. Freitas in favor

TOWN ELECTION/ MEETING DATES

Mr. Rees told the Board that as of this afternoon, Massachusetts Governor Charles Baker announced that the stay at home order will be in effect until May 18, 2020 but since the town election had been rescheduled from April 4, 2020 to May 18, 2020, Town Council advised that as long as there are not more than 10 people in at one time the election date could remain. Town Clerk Carolyn Hurley has suggested to the Board to postpone the election because of the uncertainty of the COVID -19 restrictions. She is worried about the safety for her poll workers and the voters and she has been looking into options to keep everyone safe. Health Agent Mary Kellogg shared her concerns regarding the election date in May and would like to see the election postponed for safety concerns. Mr. Rees told the Board per State Law the Town must provide at least a 20 day notice for the election and the election warrant must be posted 7 days prior to the Town election. The Board discussed optional dates for the election and the safety of the poll workers and voters. Mr. Espindola made a motion to postpone the annual town election to June 8, 2020. Mr. Freitas seconded. Mr. Murphy abstained because he is on the ballot. Vote passed. (2-0-1)

Roll Call vote: Mr. Espindola in favor, Mr. Freitas in favor, Mr. Murphy abstained

Mr. Rees reminded the Board that Town Meeting had been postponed until Saturday, June 20, 2020, because of the COVID-19 restrictions that date may have to be altered but there are several deadlines that need to be met. Mr. Rees suggested holding a special Town Meeting in July to cover the other financial articles. Town Moderator Mark Sylvia told the Board he feels that the date of June 20, 2020 should remain but said special legislation was passed that allows for Town Meeting to recess for up to 30 days once the warrant has been posted if there are still COVID- 19 restrictions in place. Currently there is special legislation in under consideration that may allow for remote participation for Town Meeting. The Board discussed different options for Town Meeting should the restrictions continue until the June 20th date. The Board will discuss these matters further at their May 11, 2020 meeting.

APPOINTMENT OF POLL WORKERS

This has been put on hold until the next Board of Selectmen's meeting due to the uncertainty of the election and the need for more poll workers.

HOST COMMUNITY AGREEMENT CERTIFICATION – METRO HARVEST

Mr. Rees told the Board the Host Community Agreement Certification (Attachment A) is the final document for Metro Harvest to file before they can open for a recreational marijuana business. Mr. Espindola made a motion to authorize the Town Administrator to sign the Host Community Agreement Certification Form. Mr. Freitas seconded. Vote was unanimous (3-0)

Roll Call vote: Mr. Murphy in favor, Mr. Espindola in favor, Mr. Freitas in favor

COVID-19 UPDATE

Mr. Rees said he met with Department Directors today and all town services are still in place as employees continue to work from home and partially in the town buildings. Health Agent Mary Kellogg reminded residents to adhere to all the guidelines in place regarding safety and social distancing. The Board and Mr. Rees thanked Ms. Kellogg for all her hard work during this crisis.

MEMORIAL DAY AND JULY 4TH

Mr. Rees told the Board he spoke to Veteran Service Agent Brad Fish regarding the Memorial Day Parade and ceremony and the July 4th parade as the town continues with the COVID-19 restrictions. Mr. Rees stated that Mr. Fish is looking into other options that could be done instead of having large group gatherings. The Board discussed some ideas and would like to continue the conversation further with Mr. Fish at the next Selectmen's meeting.

Resident Karen Villandry discussed her concerns with social distancing and residents not following the guidelines. She would like to see the gates at Fort Phoenix closed to discourage people from gathering there.

PERSONNEL POLICY

To be discussed at a later meeting

ROGERS SCHOOL UPDATE

Mr. Rees said he received word from Zac Mayo that his financial backer for the Rogers school project will not provide the funds to Mr. Mayo until permits have been issued which will require the purchase and sale agreement to be amended. The Board agreed that this issue has been going on long enough and would like to have Mr. Rees and Selectman Freitas meet with Mr. Mayo and his team to discuss a solution as well as ask Mr. Mayo to attend their next meeting.

WATER METER REPLACEMENT PROGRAM

Public Works superintendent Vinnie Furtado met with the Board for their support for an additional \$ 1.8 million for the new meter reading system that was approved at the 2019 Town Meeting. There are two types of automatic water meter reading systems that are being looked at, the drive by and a fixed system. (Attachment B) Both are more efficient than the current system and are compliant with the American meter reading standards. The Board expressed their preliminary support of the request for additional funds.

ANNUAL TOWN MEETING PREPARATION

Mr. Rees said the Conservation Commission would like to pass over article 40 (Transfer of Town Land to Conservation Commission) and he recently received a letter from G. Bourne Knowles attorney regarding a zoning change article for town meeting. The Board feel they would like to adhere to their original vote and not allow another article to the warrant just because of the current delay. They feel this would set a precedence for the future for others to feel they could place articles after the due dates.

Mr. Rees stated to the Board that due to the current emergency situation the Town is in, this is different than the Town has seen in the past. There are some unforeseen expenses the Town is incurring but there should be some reimbursement from the State. Mr. Rees expressed his concern to the Board regarding the economy and the revenues the town receives, because the

meals and hotel tax revenue will be low due to the COVID-19 restrictions and places being closed. There is also concern with the revenue from excise tax due to the purchase of new cars currently being low.

Mr. Rees said it is unclear at this point how much money the Town will receive from the State. The Board and Mr. Rees feel the Town is in a holding pattern right now until there is more information from the State. Mr. Rees will continue to work on the Town's budget.

GULF RESOURCES BEER AND WINE DISCLOSURE

Mr. Rees said the Board received a disclosure from Gulf Resources that the applicant had a criminal violation back in 1992 that wasn't disclosed at the hearing. (Attachment C) The applicant has also filed a revised application with more detail to the corporate structure for Gulf Resources Inc. Naming John P. Carrigg as the President/Director and Richard E. Carrigg as the Treasurer/Secretary/VP/Director. (Attachment D). No action was needed.

FAIRHAVEN IMPROVEMENT ASSOCIATION

Chairman Murphy read two announcements from the Fairhaven Improvement Association, both the 2020 Homecoming Day Fair and the 2020 Summer Concert Series have been cancelled due to the restrictions caused by COVID-19. The Board all agreed this was the right thing to do for the safety of the town's residents.

NOTES AND ANNOUNCEMENTS

Chairman Murphy said the next scheduled meeting of the Board of Selectmen will be on Monday, May 11, 2020 at a time to be determined.

Mr. Espindola reminded residents to protect themselves and others.

Mr. Freitas thanked First Responders and asked everyone to stay safe.

Mr. Murphy said the Fairhaven Police Department has made patches for Autism Awareness month, he also reminded everyone to stay safe.

Mr. Espindola made a motion to adjourn at 6:08 pm. Mr. Freitas seconded. Vote was unanimous. (3-0)

Roll Call vote: Mr. Murphy in favor, Mr. Espindola in favor, Mr. Freitas in favor

Respectfully submitted,



Vicki L. Oliveira
(Approved 05/11/2020)

Attachments:

- A. Host community agreement certification – Metro Harvest
- B. Water meter replacement program email and details

- C. Gulf Resources Inc. beer and wine disclosure
- D. Gulf Resources Inc. beer and wine revised application

Host Community Agreement Certification Form

The applicant and contracting authority for the host community must complete each section of this form before uploading it to the application. Failure to complete a section will result in the application being deemed incomplete. Instructions to the applicant and/or municipality appear in italics. Please note that submission of information that is "misleading, incorrect, false, or fraudulent" is grounds for denial of an application for a license pursuant to 935 CMR 500.400(1).

Applicant

I, Steve LaBelle, (*insert name*) certify as an authorized representative of Metro Harvest Inc (*insert name of applicant*) that the applicant has executed a host community agreement with Fairhaven (*insert name of host community*) pursuant to G.L.c. 94G § 3(d) on February 19 2020 (*insert date*).

Steve LaBelle

Signature of Authorized Representative of Applicant

Host Community

I, _____, (*insert name*) certify that I am the contracting authority or have been duly authorized by the contracting authority for _____ (*insert name of host community*) to certify that the applicant and _____ (*insert name of host community*) has executed a host community agreement pursuant to G.L.c. 94G § 3(d) on _____ (*insert date*).

Signature of Contracting Authority or
Authorized Representative of Host Community



Water Meter System Article

Vincent Furtado <vfurtado@fairhaven-ma.gov>
To: Mark Rees <mrees@fairhaven-ma.gov>

Thu, Apr 23, 2020 at 3:31 PM

Hi Mark

Thanks

I will certainly attend both meetings.

So that both the Selectmen and Fincom have some information ahead of my appearance, I will memorialize my intent below - with attachments. Of particular note would be the latest attachment and the tables I reference towards the end of the email.

There are 2 types of automatic water meter reading systems - drive by (which is called AMR) and fixed (which is called AMI).

Both use the same meters and radio equipment. The drive by system uses a van that is equipped with radio equipment that one has to drive in a neighborhood to get the readings where the fixed network transmits to a hub (the water office) wirelessly.

Attached is an email that I received from Patrick from Tata and Howard back in October 2018 which is what I based my May 2019 Town Meeting Water Article on for \$\$ needed for the drive-by automatic meter reading system - which was \$1.5M.

Since that \$\$ was approved last May, the plan was to read one more time this year (in August/September) and then install the meters and purchase the van and between October and April of next year so that the bills would go out on time.

Doing some preliminary work with the engineer, the \$1.5M that we secured last year is FAR inadequate for the drive-by system as they have advised me that the pricing for both systems are only a couple hundred thousand dollars apart now versus what was once double for the fixed network.

In a nutshell, the \$1.5 M that I have in an Article from last year won't get me the drive-by system without me putting in another Article this year for additional \$\$.

Assuming the engineer's estimates are correct my plan is to ask for an additional \$1.8 M to get the fixed network which was the plan in the first place but I was going to phase my way there down the road (especially with the meters and radio equipment being the same with either system).

For your review, I have also attached a recently done estimate of this work. Of particular note are the following.....

Table 3-2 on page 13 which shows that we are losing about \$137,000 annually with our current system.

Table 6-1 on page 21 shows the estimated cost for the AMR system at \$2.2 M

Table 6-2 on page 22 shows the estimated cost for the AMI system at \$2.4 M

Table 6-4 on page 24 shows the estimated cost for the installation of the meters and the radio equipment to be \$967k - which would be added to either above system.

Since these two systems are so close in price now and we were going to phase into the better system down the road, coupled with the fact that we may get this project at even reduced numbers due to the virus situation, I recommend that we submit an Article at Town Meeting for permission to spend an additional \$1.8 M.

We currently have over \$1 M in the Water retained earnings, even considering the already approved FY 21 Water Articles, so my plan was to use a combination of borrowing and retained earnings to accomplish the above.

[Quoted text hidden]

2 attachments

 20200423144313199.pdf
37K

 Fairhaven Water Meters and AMI Evaluation_Rev. 3-24-2020 (2).pdf
508K

3/10/2020

Meter evaluation - vfurtado@fairhaven-ma.gov - Town of Fairhaven Mail

From: Patrick O'Neale <PONeale@tataandhoward.com>

Sent: Monday, October 15, 2018 11:17 AM

To: Vincent Furtado <vfurtado@fairhaven-ma.gov>

Subject: RE: Meter evaluation

The budget we prepared for 'drive by' AMR in 2015 is attached. If you think drive by is where you are headed, then maybe bump this to \$1.5M. Most other systems are higher.



March 24, 2020

Mr. Vincent Furtado, Superintendent
Board of Public Works
5 Arsene Street
Fairhaven, MA 02719

Subject: Technical Memorandum
Water Meters and Advanced Metering Infrastructure Evaluation
T&H No. 5453

Dear Mr. Furtado:

In accordance with our agreement, Tata & Howard is pleased to present this Technical Memorandum for the evaluation of water meters, automatic meter reading (AMR) systems, and advanced metering infrastructure (AMI) systems for the Town of Fairhaven's water distribution system. The purpose of this evaluation is to compare different AMR/AMI technologies to provide the Board of Public Works (BPW) with information to assist in the future selection of a new meter reading system. The evaluation will review the BPW's existing water meters and meter reading system and summarize the features and functionality of new meter reading system alternatives including an AMR drive-by system, traditional fixed network AMI system, and cellular network AMI system. The current annual revenue loss due to reduced meter accuracy resulting from the aging water meters in the system will be estimated. Implementation of the new AMR or AMI system including procurement, proposal evaluation criteria, installation, and public education strategies will be reviewed. The evaluation will compare the initial capital costs and annual fees associated with the AMR and AMI alternatives based on budgetary values collected from meter and AMR/AMI vendors. Recommendations at the conclusion of this technical memo will summarize our findings for water meter and AMR/AMI technology to best suit the needs of the BPW.

1.0 Existing Metering System

The Town of Fairhaven spans an area of approximately 14.1 square miles. The Fairhaven BPW provides water service to 100-percent of the Town's population. Currently, the water system has 6,832 metered water accounts. The BPW also bills approximately 90 to 95-percent of the water accounts for wastewater, which is billed based on the registered consumption through the water meter. All water meter and meter reading infrastructure, including residential meters, touchpads, meter transceiver units (MXU), and handheld devices with Sensus Field Logic are owned and maintained by the Fairhaven BPW. MXU refers to the endpoint device that is connected to and communicates with a water meter and transmits data via radio frequency to a handheld reading device. Commercial meters and associated equipment are purchased, tested, and maintained by the water

customer. Table No. 1-1 shows the quantity and percentage of water meters in the Fairhaven system based on manufacturer and model.

Table No. 1-1
Existing Water Meter Manufacturer and Model Summary

Meter Manufacturer	Meter Model	Quantity	Percentage
Sensus	iPERL	560	8.2%
Sensus	Unknown	5,721	83.7%
Zenner	N/A	1	<0.1%
Unknown	N/A	550	8%
Totals		6,832	100%

Greater than 90-percent of the existing metering system consists of Sensus water meters. In 2011, the Sensus iPERL meter was introduced to the BPW and has exclusively been the meter installed for all 5/8-inch, and 1-inch meter applications to date. Table No. 1-2 provides a summary of the age of all meters in the system based on the documented installation year. Approximately 72-percent of the BPW's meters have been in service for over 15 years and 89-percent of the meters have been in service for greater than 10 years. In accordance with AWWA Manual M6, a planned meter replacement program should be implemented over a given number of years, e.g., 10-percent of the meters each year over 10 years or 20-percent per year over five years, so that all replaced meters in the system will consistently be an efficient, modern design.

Table No. 1-2
Existing Water Meter Age Summary

Age (years)	Quantity	Percentage
>20	2,424	35.5%
16-20	2,243	32.8%
11-15	1,353	19.8%
6-10	362	5.3%
0-5	390	5.7%
Unknown	60	<1%
Totals	6,832	100%

The existing water meters range in size from 5/8-inch to 6-inch. Table No. 1-3 summarizes the quantity of meters by size in the existing system. The 5/8-inch water meters, which make up the majority of the residential meters, represent approximately 96-percent of the total meters in the system.

Table No. 1-3
Existing Water Meter Size Summary

Meter Size	Quantity	Percentage
5/8-inch	6,572	96.2%
3/4-inch	20	0.3%
1-inch	158	2.3%
1.5-inch	28	0.4%
2-inch	39	0.6%
3-inch	8	0.1%
4-inch	5	<0.1%
6-inch	1	<0.1%
Unknown	1	<0.1%
Totals	6,832	100%

The Town of Fairhaven's BPW includes five trained meter reading employees that rotate through different routes each containing approximately 325 to 380 meters. It takes the employees four to five weeks, depending on the weather, to collect all of the meter readings in the system. Approximately 95-percent of the meters are connected to Sensus touchpads mounted on the exterior of the customer's house or building. These meter readings are collected by using a handheld meter reading device and physically contacting the touchpad located outside each customer's house or building. Most water customers are billed semi-annually, however, some commercial users are billed on a quarterly schedule.

The BPW has Sensus RadioRead MXU endpoints, which are wired to the water meter and installed on the exterior of the building, on the remaining 5-percent of the metered accounts in the system. These meters are read by handheld devices that obtain radio read data when in close proximity to the endpoint connected to the water meter. The BPW's meter reading staff carries this handheld device as well as the touchpad handheld while walking the routes collecting meter readings.

Meter reading data is then uploaded from the meter reading software into the BPW's utility billing system, VADAR. The VADAR system is used by the BPW to obtain customer information associated with each meter account. After uploading readings to VADAR, Fairhaven's BPW staff search through this data by hand to find any abnormal readings including high, low, and zero usage, or error readings. Abnormal readings are determined by comparing the current usage with the previous year usage recorded during the same time. All abnormal readings are recorded on a re-read list which is then given to the meter reading employees to perform an additional round of readings. Using this list, the staff will then either collect the correct data, identify issues present, or schedule an appointment to further investigate the problem if it is not evident outside of the customer's house or building. It typically takes two employees five to seven weeks to read through all of the data, re-read those addresses with abnormal readings, and have all data complete and ready for billing.

The information is then sent to a third-party billing company that takes the meter reading and billing summary compiled by the BPW and generates, prints and mails the bills to the customer. The Water and Sewer Department were billed over \$8,000 in 2018 for these services provided by the billing company. The bills generated include information on the prior meter reading, current meter reading, usage, and cost. The bill also provides a breakdown on the water and sewer costs. The BPW's base charges by water meter size and current rate structure for water usage are shown below in Table No. 1-4 and Table No. 1-5, respectively. The base charge shown in Table No. 1-4 is included with each water bill in addition to the cost associated with the actual water usage.

Table No. 1-4
CY19 Water Bill Base Charge By Meter Size

Meter Size	Base Charge
5/8"	\$50.00
3/4"	\$75.00
1"	\$125.00
1.5"	\$250.00
2"	\$400.00
3"	\$750.00
4" & 6"	\$1,250.00

Table No. 1-5
CY19 Water Rates

Tier	Volume of Water (cubic feet)	Water Rates (\$/HCF)
1	0 – 2,250	\$2.09
2	2,251 – 4,500	\$5.12
3	4,501+	\$8.23

In Fairhaven, a customer's registered water usage is used to produce bills for both water and sewer. The tiers for the water usage are based on cubic feet of water used, but the rates are billed per hundred cubic feet (HCF). As previously mentioned, the BPW bills approximately 90-95% of the water accounts for wastewater on the same schedule as the water bills. The BPW's sewer rates are shown in Table No. 1-6. Similar to the water rates and bills, the sewer bills are based on water usage in HCF. The capital fee shown in Table No. 1-6 is included with each sewer bill in addition to the cost associated with the actual water/sewer usage.

**Table No. 1-6
CY19 Sewer Rates**

Rate Tiers	Sewer Rate (\$/HCF)	Capital Fee
1	\$7.21	\$25.00

2.0 Automatic Meter Reading Systems

Automatic Meter Reading (AMR) is a technology that allows for automatic collection of water meter readings and transferring of the data received to a central database for analysis and billing. The data is collected by use of radio frequency (RF) transmissions which allow the community to read meters without the need to access the customer's property. AMR systems are generally either a mobile, fixed network, or cellular network design. Fixed network and cellular systems are often referred to as Advanced Metering Infrastructure (AMI) systems. AMI systems have the capability for two-way communications, interval read data, and multiple, instantaneous alarms such as leak and tamper detection. Some of the standard features for mobile AMR, fixed network AMI, and cellular AMI systems are summarized in the following sections.

2.1 Mobile Automatic Meter Reading (AMR) Systems

A mobile AMR system collects meter readings using a drive-by unit in a vehicle. Typical AMR systems include water meters and battery powered RF endpoints connected to the water meters to transmit meter reading data to a drive-by transceiver which is connected to a laptop, tablet or smartphone. The RF endpoint that is attached to the meter will send a signal periodically, typically every 15 seconds. This signal is picked up by the drive-by transceiver. During meter reading, any alarms such as meter tampering, backflow, leak detection, and low battery are recorded on a laptop, tablet, or smartphone using the corresponding software. Operators are able to view the reads and alarms as the information is collected. After collection, the meter reading and any associated data is transferred to a central location equipped with the AMR meter reading software for analysis and data storage purposes. Meter readings can be transferred from the meter reading software to the utility billing system for billing purposes.

The RF endpoints typically record water usage at a specified interval, typically hourly, and will store this data for an extended period of time. However, with most mobile AMR systems, this information will not be sent to the transceiver at the time the endpoint "bubbles up" to send a meter reading. To collect this information, the staff collecting readings have to use the transceiver and associated device (laptop, tablet, smartphone etc.) to request the interval readings stored. Using an AMR system allows the BPW to more efficiently collect meter readings and provides the ability to respond to issues related to the meter data using the generated alarms and software, but only as frequently as meter readings are collected using the drive-by unit.

Implementing a mobile AMR system would allow for a more efficient meter reading collection process, provide the BPW the ability to increase the billing frequency and accuracy, and reduce the number of estimated bills. The more frequent bills will improve the cash flow for the BPW and provide more manageable bills for customers. Some of the major features and capabilities of a mobile AMR system include:

- Meter readings can be obtained without entering the customer's property.
- Increased efficiency in meter reading operations.
- Increased reading accuracy and reduced number of estimated bills.
- Reduced administrative efforts looking for meter reading errors.
- Ability to increase the frequency of billing and improve cash flow.
- Integration with billing system for automatic bill generation.
- Better customer service with more accurate data and alarm flagging such as leak detection on the customer side of the water meter.

RF Endpoint Compatibility

Most RF endpoints provided by typical vendors are open network endpoints meaning they are compatible with other meter brands and models as long as the connection is 3-wire type. Typically, manufacturers provide lists of compatible water meters that work with their AMR/AMI systems. This will allow the BPW to keep newer compatible meters that are currently installed in the system and working well, saving replacement costs, while also allowing for upgrades to different meters in the future, as necessary.

2.2 Advanced Metering Infrastructure (AMI)

AMI systems provide a technology which automatically collects water meter readings and data and transfers that data to a central location for analysis and billing purposes. This system operates similarly to a traditional AMR system, however, it provides more sophisticated data collection, analysis, alarms, and typically provides a two-way communication link between the meter reading software and the RF endpoints. An AMI system has the ability to not only send and receive real-time water usage readings from each customer without physically reading the meter, but can also receive and act on instructions and program changes sent from the meter reading software to the RF endpoint. AMI systems can operate and send meter reading data via radio frequency, cellular, fiber optics, or other available backhaul methods including combinations of these backhaul alternatives listed.

Frequency of readings and data transmissions, along with having to send a staff member out to collect readings are major differences between a mobile AMR and a fixed network or cellular AMI system. Some AMR systems can be upgraded to an AMI system using the same RF endpoint hardware by programming a firmware update. Depending on the system, the update may require a programming update be sent out to each RF module when using the drive-by unit, and in other systems, each RF endpoint may have to be individually visited and reprogrammed. Other vendors will utilize completely different RF endpoints for a mobile AMR system or a fixed network AMI system and will require



replacement of the RF endpoint to transition from a mobile AMR system to an AMI network. The meter reading software may be different if using an AMR system or an AMI system as the AMI software is typically equipped with more features and is used to manage and analyze a significantly greater volume of data.

Traditional fixed network AMI systems include water meters and battery powered RF endpoints connected to the water meters to transmit meter reading data to a collector or series of collectors and repeaters mounted on tanks, buildings, or poles within Town. The collectors receive, store, and transmit meter reading data to a network control computer (NCC), which can be hosted or installed locally within Town. The meter reading software, which is typically cloud based, is used to analyze meter reading data and transfer the data to the BPW's utility billing system. An AMI system provides similar benefits as an AMR system, but can also provide improved meter reading efficiency as drive-by data collection is not required. Additional customer service based on daily or instantaneous alarm flagging including customer side leak detection is another benefit to an AMI system. Typical features and capabilities of an AMI system include those previously listed for an AMR system as well as the following:

- Two-way communication between the RF endpoint and meter reading software for on demand readings and RF endpoint programming changes
- Remotely read meters, without the need for driving a route to collect readings as done with an AMR system
- Daily warnings for high, low, or zero flows customized by water meter size or specific customer usage patterns
- Daily and instantaneous customer-side major leak (pipe burst) detection and continuous usage for smaller volume leak detection
- Standard interval read data logging for determining usage trends and patterns
- Improved customer service with more analytical tools and water consumption history available to office personnel
- More advanced customer portal for customers to access additional daily data as permitted by the BPW which can reduce customer service calls
- Additional tools and data for public education purposes and conservation promotion and enforcement
- Improve unaccounted-for-water (UAW) analysis through time synchronization of master meters and consumer meters
- Network for implementation of future distribution system technologies, including remote customer shutoffs for failure to pay bills or due to severe customer leaks and distribution system leak detection.

Traditional Fixed Network and Cellular Network AMI Comparison

AMI systems evaluated include both traditional fixed network and cellular based networks. A traditional fixed network uses stationary data collectors mounted within Town, owned and maintained by the BPW, to receive, store, and transfer data to and from the RF endpoint connected to the water meter. A cellular network operates similarly to a traditional fixed network, however, it does not require the installation of data collectors

specifically for the AMI network. RF endpoints use existing cellular infrastructure that is owned and maintained by a cellular company as the backhaul method for receiving and transmitting data to and from the meter RF endpoint. Most fixed network and cellular based networks can provide the typical features and capabilities noted above for an AMI system.

A traditional fixed network AMI system requires the use of RF endpoints at each meter location to transmit information to data collectors that are strategically located throughout the Town. Propagation studies are conducted prior to installation of the system by the system vendor to determine the location and quantity of data collectors needed to communicate with all meters throughout the system. These data collectors are typically mounted to water storage tanks, utility poles, buildings or other infrastructure that is located at high elevations with the ability to access an external power source. Utilizing water storage tanks and BPW owned buildings is preferred to avoid rental costs for space on a utility pole or on a structure not owned by the BPW. Some systems offer solar powered data collectors which would eliminate the need for an external power source, but due to the criticality of keeping the collectors in operation at all times, an external power source is often used. After data is collected, it is transmitted to a server where the data can be analyzed using the manufacturer's meter reading software, and meter reading data can be transferred by account into the BPW's billing system.

A cellular network AMI system provides all of the benefits of a fixed network without the need for new data collector infrastructure. Data collection and transfer in a cellular network is achieved wirelessly through existing infrastructure already installed by a cellular network provider. The BPW pays a contractual fee(s) to the service provider based on the number of accounts, and all maintenance required to keep the system in operation is the responsibility of the cellular service provider. Cellular network AMI systems provide a full coverage network capable of reading water meters in any area with cellular reception. Data is collected from the RF endpoint and transmitted to a cloud based system where data can be analyzed using the manufacturer's meter reading AMI software, and meter reading data can be transferred by account into the BPW's billing system.

Both traditional fixed network and cellular AMI systems will meet the goals and priorities of the BPW for its meter replacement program. As mentioned above, there are numerous benefits to implementing a fixed network or cellular AMI technology. Table No. 2-1 provides technology specific advantages and disadvantages for a traditional fixed network compared to a cellular network AMI system. Mobile AMR systems are not included in the comparison in Table No. 2-1.

Table No. 2-1
Fixed Network and Cellular Network AMI Comparison

AMI System	Advantages	Disadvantages
Traditional Fixed Network	<ul style="list-style-type: none"> • Lower annual O&M costs • Repeaters can be installed to enhance network and capture readings in areas with intermittent coverage 	<ul style="list-style-type: none"> • All network hardware owned by the BPW • Network infrastructure has to be constructed prior to meter and RF endpoint deployment • Infrastructure can be damaged by the weather (lightning strikes, wind, etc.) • Maintenance contracts and hardware management plan is necessary to maintain network • Rental fees if mounting collectors on private structures • Routine IT support required
Cellular Network	<ul style="list-style-type: none"> • Cellular infrastructure is owned and maintained by the service provider • Faster deployments since cellular infrastructure already installed • Infrastructure management and maintenance plan is not necessary 	<ul style="list-style-type: none"> • Higher annual O&M costs due to monthly fees for cellular service contracts • If areas in BPW exist with zero cellular service, mobile read collection using a handheld will be necessary since cellular network will not be enhanced

2.3 Billing Improvements

Implementing an AMR or an AMI system allows the BPW to more efficiently read water meters and bill water and sewer customers on a routine and continuous cycle. The BPW can obtain on demand meter readings as necessary with an AMI system remotely or through an AMR system using drive by reading. With more accurate and timely meter readings collected through the AMR or AMI network, the BPW can bill their customers more frequently and reduce the number of inaccurate bills. More frequent billings will expedite receivables for the BPW and provide more manageable bills for customers. The meter and AMR or AMI implementation program provides the BPW with an opportunity to update customer account information to improve how bills are generated and mailed to customers. Transfer files are set up by the billing system vendor and meter readings are automatically transferred from the analytics AMR/AMI software to the billing system, minimizing manual entry of meter readings and decreasing the potential for data transfer errors as well as unifying how the BPW bills residents.

2.4 Customer Service

AMR and AMI systems store historical water usage data for each meter account for a finite period of time. When a customer notifies the BPW about a discrepancy, such as a high water bill, the BPW will have the ability to quickly pull up a usage profile and graph of the customer's account and provide a breakdown of water usage throughout the billing period, including hourly interval data if implementing an AMI system. If the BPW implements a mobile AMR system, it may be able to review hourly or daily interval data depending on the specific RF endpoints and AMR system, but not all mobile AMR systems standardly store and transmit hourly or even daily interval readings. Some RF endpoints in an AMR system will only transmit the meter reading at that specific point in time without historical readings. With interval data, the BPW will be able to determine if a high volume of water was used during a certain time period or on a certain day to assist the customer in understanding when the water was used. This tool will be valuable to the BPW in providing customers with immediate information to explain the reasoning behind a higher than normal water bill.

Hourly interval data collected through an AMI system will allow the BPW to detect leaks on the customer side of the water meter on a daily basis. Leaks can be detected by a continuous flow of water measured by the meter register throughout the day, even during hours when demands are typically zero. An AMR system is not able to provide this level of service as readings are collected only at the frequency of generating bills, not daily. Additional flags in the AMI software can be generated upon high daily consumption, low daily consumption, or zero flow detections for an extended period of time. Identifying customer leaks and significant flow pattern changes will improve customer relations with the Fairhaven BPW, enhance customer confidence in the BPW's management of the water system and billing practices, and at the same time promote the conservation of water.

Warnings that can be flagged in the AMR and AMI software include tamper alarms for when registers are disconnected and alter how the water meter records consumption and backflow alarms that indicate water is traveling through the water meter and register in the reverse direction. If backflow occurs for an extended duration or routinely, the meter installation should be inspected by BPW personnel to check if the meter seal has been cut or if tampering has occurred.

Although the new AMR or AMI system will improve meter reading procedures and billing efficiency, the additional data and software available to BPW personnel will require their efforts be redirected to managing the new information and reports generated. BPW personnel will need to routinely review data and the reports generated in the analytics software and take the appropriate actions when water usage alarms are flagged in the software to realize the true benefits of either system. Customers may contact the Water Department in an attempt to obtain additional water usage data, above and beyond what is available now, after the AMR or AMI system is implemented.

3.0 Water Meter Accuracy and Revenue Loss

Water Meter Accuracy Degradation

Water meters are mechanical devices and will begin to work less efficiently over time losing accuracy. As a meter loses accuracy, it will under register the flows through the meter. Some water consumed by the customer is not registered by the water meter resulting in unaccounted for or non-revenue water. Factors that contribute to meter inaccuracy include water quality, low or high flow rates, buildup of materials from the water in the distribution system, and general wearing of mechanical components within the meter. To determine if a meter is operating within accuracy standards, the meter must be tested. Testing of water meters is costly and not always routine practice for a utility, particularly for small residential meters where replacement costs may be less expensive than the labor fees for a testing company.

Utilities tend to replace meters based on age rather than based on their accuracy. Normal life expectancy of water meters varies from 7-15 years according to *Chapter 11 – Capacity Development and Standard Operation Procedures* in the Massachusetts Department of Environmental Protection's (MassDEP) *Guidelines for Public Water Systems*. Utilities tend to focus on the accuracy of larger meters because these meters are typically installed at locations that have high water usage. The large meters have more mechanical parts as well which makes them more vulnerable to wear and inaccurate registration of flows. Small inaccuracies at meter accounts that use a large volume of water can result in significant revenue loss for the BPW. Periodic testing of water meters can be a beneficial practice for water utilities. Meters that are found to be outside of the AWWA accuracy standards or more stringent manufacturer accuracy limits should be repaired or replaced. Table No. 3-1 shows the AWWA recommended testing frequency for water meters.

Table No. 3-1
AWWA Recommended Water Meter Testing Frequency

Meter Size (Inches)	Type	Frequency (Years)
5/8-3/4	Positive Displacement	10
1-2	Positive Displacement	5
≥3	Compound/Turbine/Fire	1

It is also important that water meters are accurately sized for the specific customer based on typical water usage, minimum and maximum flow rates, and the volume percentage of water registered that falls into certain flow ranges. Data logging an existing water meter can be used to assist in the selection of an appropriately sized water meter. AWWA M22 Sizing Water Service Lines and Meters Manual provides guidance on appropriately sizing water meters for a particular customer. Meters not sized appropriately become a significant concern when there are several large meters that exist in facilities that have

changed owners or water demands over time. A large meter could be installed in a location that no longer has a high water demand, and a significant portion of the flow through the meter could be at a low flow rate that the large meter does not accurately measure, which would result in revenue losses for the BPW.

Meters not sized appropriately is not a major concern in Fairhaven with 14 meters greater than 2-inch in the system. However, during the meter replacement program, the existing eight 3-inch, five 4-inch and one 6-inch meters should be reviewed to confirm the meter sizing is appropriate for the water usage patterns at these facilities.

Consumption and Revenue Loss

A study in the Journal of the AWWA determined water meter accuracy based on statistical sampling of water meter age and material. Meter accuracy degraded by 0.3 to 0.5-percent each year in service based on the results of the study. Based on the estimated meter inaccuracies using the AWWA study, annual revenue loss due to unregistered flow for water billings is shown in Table No. 3-2. A meter accuracy degradation of 0.3-percent per year was used in this analysis as a conservative value to estimate annual revenue loss in Fairhaven. The total registered volume of finished water, as reported in the BPW's 2018 Annual Statistical Report (ASR), was divided by the total number of meter accounts to estimate and evenly distribute the recorded volume of water consumption between all accounts. The unrecorded consumption per meter was determined by using this estimated water usage per meter multiplied by the corresponding meter deficiency based on the age of the water meter. Meter deficiency is equal to the yearly degradation of 0.3-percent multiplied by the age of the meter in years. The sum of the unrecorded consumption for each meter as shown in Table No. 3-2 provides a total annual unrecorded consumption. The age and quantity of meters included in Table No. 3-2 were based on data tables provided by the Fairhaven BPW. There are 60 water meters where the age is unknown. To be conservative these meters were assumed to be new and have no revenue loss due to degrading meter accuracy.

Based on the water rates shown in Table No. 1-5, a Residential Tier 2 fee of \$5.12 per HCF was used as a conservative value to estimate the revenue loss. The estimated volume of water not being recorded through under registering water meters in Fairhaven is approximately 20 million gallons (mg) per year, approximately 4.8-percent of the BPW's yearly water usage according to the 2018 ASR. The total revenue loss for water billings due to under registering meters is estimated to be approximately \$137,000 annually. Approximately \$110,000 of this revenue loss is attributed to meters with greater than 15 years of service life. This annual revenue loss is a conservative value estimated purposely not to inflate the approximate revenue loss by the BPW. The actual revenue loss may be higher depending on the rate structure Tier in which each customer's usage falls into. Implementing a meter replacement program will reduce unregistered flow and minimize revenue loss caused by old, inaccurate water meters.

The approximate revenue loss for wastewater billings was based off the same data provided in Table No. 3-2 but used the sewer rate of \$7.21 per HCF. Since 90-95% of the water accounts are billed for sewer, the total revenue loss in sewer billings is based on 90-percent of the total unrecorded volume as a conservative estimate. The total revenue loss for sewer billings due to under registering meters is estimated to be approximately \$174,000 annually.

Table No. 3-2
Estimated Annual Water Billings Revenue Loss from Unrecorded Consumption

Meter Age (Years)	Quantity	Estimated Accuracy	Unrecorded Consumption Per Meter (Gallons)	Unrecorded Consumption Subtotal (Gallons)	Revenue Loss per Meter	Revenue Loss Subtotal
0	60	100.00%	0	0	0	0
1	92	99.70%	182	16,744	\$1.25	\$115
2	89	99.40%	364	32,396	\$2.49	\$222
3	70	99.10%	546	38,220	\$3.74	\$262
4	71	98.80%	728	51,688	\$4.98	\$354
5	68	98.50%	910	61,880	\$6.23	\$424
6	58	98.20%	1,092	63,336	\$7.47	\$433
7	95	97.90%	1,274	121,030	\$8.72	\$828
8	66	97.60%	1,456	96,096	\$9.96	\$658
9	74	97.30%	1,638	121,212	\$11.21	\$830
10	69	97.00%	1,819	125,511	\$12.45	\$859
11	171	96.70%	2,001	342,171	\$13.70	\$2,343
12	368	96.40%	2,183	803,344	\$14.94	\$5,498
13	307	96.10%	2,365	726,055	\$16.19	\$4,970
14	260	95.80%	2,547	662,220	\$17.43	\$4,532
15	247	95.50%	2,729	674,063	\$18.68	\$4,614
16	292	95.20%	2,911	850,012	\$19.93	\$5,820
17	547	94.90%	3,093	1,691,871	\$21.17	\$11,580
18	605	94.60%	3,275	1,981,375	\$22.42	\$13,564
19	799	94.30%	3,457	2,762,143	\$23.66	\$18,904
>20	2,424	94.00%	3,639	8,820,936	\$24.91	\$60,382
Total	6,832			20,042,303		\$137,190

4.0 MassDEP Recommendations and Guidelines

The Water Conservation Standard, issued by the Water Resources Commission, has guidelines for metering and water usage rates that should be considered when looking into upgrading water meters and the water meter reading infrastructure. The MassDEP strongly recommends that an AMR or AMI system be used because it allows for remote reading of meters which consumes less time allowing the water department to collect

readings more often. Collecting the readings more often using an AMR or AMI system allows for the water department to enforce water use regulations, examine meter tampering and water theft, alert customers of a potential leak on the customer side of the meter, identify water meters that may not be sized right and to review the balance between the master meter(s) and customer meters. All of these benefits help assist the water department with water conservation, customer service, and billing.

It is recommended by the MassDEP that water suppliers bill monthly or at a minimum every other month, and that the system is 100-percent metered. By billing monthly or bi-monthly it provides the water supplier and customer useful data about seasonal usage, potential leaks, and enhances the cashflow for the water supplier. With more water usage information, it lets the water supplier evaluate the rates better and allows for tailoring the tiers for different customer types. Many AMR or AMI vendors have an analytics software that is used as a customer portal for any customer to review its historical water usage information. The customer portal can clarify the costs of water and billing process and will give the customer sufficient information to determine if they are conserving water. Implementing an AMR or AMI system will help the water supplier meet the guidelines for metering systems associated with the Water Conservation Standards.

5.0 Project Implementation

The method for procuring a water meter and AMR or AMI system can be achieved through various processes. The first method of procurement is a public invitation for bid (IFB) which involves generating specifications for a meter and AMR or AMI system and issuing bid documents to interested parties for the supply and installation of the meters and AMR or AMI system. Upon receipt of all bids the BPW would award the contract to the lowest responsive bidder.

The second option for procurement is a criteria based proposal process for the supply of water meters and RF endpoints and the supply and installation of the AMR or AMI system. A request for proposals (RFP) is generated to identify the required and preferred features for the meters and AMR or AMI system. The RFP is issued to interested parties, and after receipt of separate technical and price proposals, the BPW reviews and selects the most advantageous system based on a combined analysis of the predetermined technical evaluation criteria for the technical proposal and the costs included in the price proposal. The most advantageous proposal is not necessarily the bidder with the lowest price proposal. Typically, the systems that are determined to be the most advantageous will be asked to give a presentation of their system to the BPW to demonstrate the advantages of their products and answer any remaining questions.

With the second option, after procurement of the meters and AMR or AMI system through an RFP process, installation of the water meters and RF endpoints can be completed by BPW personnel or installation services can be procured through a public IFB process where the responsive installation contractor with the lowest bid price is awarded the contract.

The recommended procurement method for the BPW is to use a criteria based RFP process to allow the BPW to select a water meter and AMR or AMI system that will best fit the needs and preferences of the BPW, not based solely on price as with an IFB. Utilizing a public IFB would not allow the BPW to select the most advantageous system based on the technical evaluation criteria, but instead would require the BPW to award the contract to the responsive bidder with the lowest bid price that meets the requirements defined in the specifications. Following procurement of the water meters and RF endpoints, it is our understanding the BPW will outsource installation services to a contractor. If outsourcing installation services, a separate IFB shall be issued to solicit bids and award the installation contract to the responsive installation contractor with the lowest bid price.

The specifications and requirements set forth in the RFP would govern where responsibility lies for the supply contractor and the installation contractor. The supply contractor would be responsible for supplying all water meters, RF endpoints, and AMR or AMI infrastructure required for a fully functioning metering network. In addition, the supply contractor would be responsible for installing, testing, and troubleshooting the furnished AMR or AMI network equipment and software, not including the RF endpoints. The installation contractor would be responsible for properly installing and programming water meters and RF endpoints to communicate through the AMR or AMI network. A technical support item and training item would be included in the RFP requiring the supply contractor to provide technical assistance and training to all installation contractor personnel who will be installing the meters and RF endpoints.

RFP Evaluation Criteria

The BPW has provided Tata & Howard with a list of evaluation criteria for the new water meter and AMR or AMI system. The criteria are based on features that the BPW considers most important to have in a water meter and AMR/AMI system. These and other criteria will be grouped into certain categories in the evaluation criteria used to compare and score the technical proposals submitted under the RFP. A technical proposal will be scored Highly Advantageous, Advantageous, Not Advantageous, or Unacceptable for each category included in the evaluation criteria based on the system's technical capabilities presented in the proposal. Certain categories in the evaluation criteria will be considered more important and the scoring in these categories will be weighted differently than other less important categories. Proposers submitting overall Highly Advantageous or Advantageous proposals will be asked to demonstrate their systems to the BPW. The BPW's high priority criteria for the AMR/AMI system are summarized below.

- Alarms for atypical water usage (high water usage alarm, low water usage alarm, continuous water usage leak detection, backflow notification, dry pipe alarm, no usage for a pre-programmed period of time)

- Reduce water loss in the system through accurate meter readings, more frequent meter readings, time sensitive leak detection, and alarms for tamper detection
- Alarms associated with the RF endpoint (low battery alarm, no meter read alarm, no signal/communication alarm)
- 20-year battery life for the RF endpoint and battery failure detection
- Compatible with the existing VADAR billing system
- Simple reading and data transfer process allows the BPW to bill quarterly and/or monthly
- Extended warranty periods on water meters and AMR/AMI equipment
- System provides appropriate data encryption and security to protect BPW and consumer information
- Reduce service calls with more accurate data collection and by making information available to consumers through a secure customer portal
- Meter reading software provides user-friendly individual account summary reports that can be customized by BPW personnel for specific customers
- Minimum 90-day storage of data in meter and/or RF endpoint if using a mobile AMR system where data is not transferred and collected daily
- Two-way communication with AMR/AMI equipment and software that can be upgraded and reprogrammed based on future technology advancements

Water Meter and RF Endpoint Installation

The installation of water meters and RF endpoints will be awarded to an installation contractor by public bid. After the procurement contract for meter and AMI materials is awarded, a separate IFB will be issued and awarded to the lowest responsive bidder. Contract services will expedite the completion of the meter replacement program compared to if BPW personnel completed the meter installations. An installation contractor can ensure that adequate resources are assigned to the work without unexpected interruptions. Instances come up throughout the year where BPW personnel may be required to complete additional tasks which may slow the installation progress. The appointment scheduling, call backs, cancellations, and rescheduling can become a burden on BPW personnel while trying to manage normal BPW business if BPW personnel were to complete the meter installations. Installation contractors have developed software programs to aid in scheduling customer appointments and tracking installer schedules streamlining the process. An installation contractor will likely be given six (6) to eight (8) months to complete the meter replacement program. This will also allow the BPW personnel to remain focused on the other daily tasks required to maintain the water system.

Billing System Coordination

The new AMR or AMI system software will be required to communicate, receive, and transfer data with the BPW's existing VADAR billing system. The RFP will require the vendor to provide references where their system was able to interface with a VADAR billing system. The vendor will be required to carry all costs associated with configuring



the necessary transfer files for communication of meter readings, event flags, and account data between the two systems. Contact information for the BPW's billing system representative should be identified in the RFP so that the proposers have an adequate opportunity to review the needed transfer files with the billing system vendor to understand the work and fees required to integrate the systems prior to providing a proposal cost. The billing system vendor will often be the party that develops the transfer files so the proposer will have to include appropriate costs for the billing system vendor in its proposal.

It will be the responsibility of the installation contractor to collect and record accurate information from the installation to update the existing account information within the VADAR billing system. The AMR/AMI system supplier often relies on the data collected by the installation contractor as well to update the account information in its analytics software. It is critical for the same information to be added to the billing system and the analytics software in order for these two systems to properly communicate and transfer data. A second transfer file known as a mass meter data transfer file is often generated by the billing system vendor to take the installation data recorded by the installation contractor in an excel or .csv file and replace the account information in the billing system. The mass meter data transfer file eliminates the potential for human error and data to be added incorrectly into the billing system. If a new meter number is entered incorrectly into the billing system, but entered correctly in the AMR/AMI software, then the meter numbers will be different in each system, and the two systems will not be able to communicate if the process uses the meter number to transfer data between the systems.

There will be a period of time where two reading systems will be in operation, the existing Sensus reading system and the new AMR or AMI software. A procedure will need to be developed for collecting meter readings using the correct methods and for entering the meter readings into the appropriate meter reading software. Coordination with the meter and AMR/AMI system supplier will be necessary to simplify the transition period and avoid billing confusion.

Depending on the complexity of the bill generation process which will need to be reviewed with the BPW's billing system vendor prior to the meter replacement program, final bills for the old meter can be issued to the customer upon replacement of an existing water meter or can be incorporated with a partial bill based on the new water meter on the customer's normal billing cycle.

Public Education and Customer Service

It is always important with implementation of a new metering project to keep the public well informed and educated on the basis for the project, timeframe, system features, and replacement coordination. Since the customers are funding the project, it is imperative to keep the community involved with the progress.

A public education/outreach program should be implemented to address both the public and the BPW's governing authorities who review and approve the project funding and financing. Some programs and steps of this process may already be in place in Fairhaven. A governmental authority outreach program should be structured to discuss the following topics:

- Financial Data
 - Estimated capital and yearly O&M costs
 - Procurement, funding, and financing options
 - Billing frequency and revenue changes
- Anticipated Schedule
 - Funding and financing timeframe
 - Procurement of meters and AMR/AMI system
 - Installation and implementation
- Impact to rate payers

The general public should be involved in the design and planning process to a point. A general public education/outreach program should be structured to discuss the following topics:

- Address any concerns with health effects of AMR or AMI system with information furnished by the meter and system supplier
- Reasons for the meter system upgrade and associated benefits
 - Fair and equitable water bills
 - Benefits of increased billing frequency
 - Enhanced customer service
 - Customer informational portal
- Impacts of the project and how customers can assist with progress
 - Scheduling procedures and customers are expected to be responsive
 - Meter installation time: 20 minutes to 1 hour
 - Home entry is required to replace the water meter and connect the RF endpoint
 - Keep the space around the water meters accessible
 - Customer to address plumbing issues on water service prior to meter installation
 - RF Endpoints may be mounted on the building exterior depending on the system selected
 - Tampering with water meters or RF endpoints is prohibited, is easily detected through the AMR or AMI system, and customers who tamper with equipment will be penalized appropriately
- Commercial and Industrial appointments can be scheduled during off hours to minimize impact to daily business operations
- Data transfer is secure and no private account information is transmitted
- Create a website and forum to provide routine information, frequently asked questions (FAQs), and updates throughout the project and to provide customers a medium to ask questions to the BPW

In transitioning from design to procurement and then to project implementation, the presented information should transition from conceptual facts to notification of the planned installation process. This should be conveyed using multiple forms of media prior to the start of the program so that water users have a clear understanding of what to expect. The following are suggested methods of information distribution from the BPW to the customers:

- Bill stuffers
- Informational mailings
- Information included in Consumer Confidence Reports
- Door hangers
- Phone calls
- Advertising at BPW Hall
- Television broadcast
- Newspaper articles
- Public service announcements
- BPW website posts
- Social media

Each meter route will be notified that meter installations are beginning in their area and they should be advised to schedule an appointment with the installation contractor in advance. Typically, three letters can be mailed to customers with a two week period between letters. Each follow up letter can include language that stresses the importance of the meter replacement program more than the previous letter with the last letter identifying it is the Final Notice. Those who do not call to schedule an appointment should be contacted directly to schedule an appointment. It is important to stress that this replacement program is necessary and the customer participation is mandatory.

Although a majority of water customers will be cooperative in the meter replacement program, there will be some customers who do not respond or refuse to allow the BPW to replace the water meter. The BPW should develop a policy for those unwilling to participate in the meter replacement program. Such policy may include a fee, estimated bill, or shutting off the water service after all reasonable attempts to contact the customer have failed. It is important to adequately inform the customer of the penalties of noncooperation prior to taking action. In addition, the BPW should review all of its existing documented policies, ordinances, and regulations prior to proceeding with the meter replacement program to confirm an existing policy will not conflict with the goals of the meter replacement project or inhibit the BPW from ultimately gaining access to the meters for replacement.

6.0 Project Costs

Project Capital Cost Comparison

Water meter and AMR/AMI system vendors provided preliminary budgetary costs for a mobile AMR system, AMI traditional fixed network system, and cellular system. The

budgetary costs were evaluated to prepare a budgetary cost estimate for each AMR, AMI and cellular system technology. Table No. 6-1 summarizes the budgetary supply costs for new water meters and RF endpoints and the supply and installation costs for an AMR drive-by system. The total estimated cost for a mobile AMR system is approximately \$2,252,000. The cost assumes all water meters in the system will be replaced regardless of age. However, depending on the AMR system provided, water meters less than 10 years old may be left in place with only a new RF endpoint supplied to be connected to the existing water meter. Assuming the approximately 700 water meters that are less than 10 years old are 5/8-inch water meters, the cost savings would be approximately \$98,000 from the costs shown in Table No. 6-1. This value does not include the costs associated with the installation of the water meters, RF endpoints and annual system maintenance and support fees. Annual support fees are shown below the capital costs in the table for reference. For routine support and system equipment updates and maintenance, the annual cost would need to be carried in each annual budget for the BPW. Mobile AMR systems are generally lower in cost to implement in comparison to fixed network and cellular systems although the cost difference is not as significant as it was when AMI systems were first being implemented.

Table No. 6-2 summarizes the budgetary supply costs for new water meters and RF endpoints and the supply and installation costs for a traditional fixed network AMI system. The total estimated cost for a fixed network AMI system is approximately \$2,425,000. As stated previously approximately \$98,000 could be saved by not replacing the meters that are less than 10 years old. This value does not include the costs associated with the installation of the water meters, RF endpoints and annual system maintenance and support fees. Annual support fees are shown below the capital costs in the table for reference. For routine support and system equipment and software updates and maintenance, the annual cost would need to be carried in each annual budget for the BPW. The annual costs for the customer portal for improving customer service and providing greater access to water usage information is included in the annual support fee.

Table No. 6-3 summarizes the budgetary supply costs for new water meters and cellular endpoints and the supply and installation costs for a cellular AMI system. The total estimated cost for the cellular AMI system is approximately \$2,340,000. As stated previously approximately \$98,000 could be saved by not replacing the meters that are less than 10 years old. This value does not include the costs associated with the installation of the water meters and cellular endpoints. The annual cellular subscription fee of \$0.89 per endpoint per month is included in the cost summary in Table No. 6-3. This annual cost would need to be carried in each annual budget for the BPW to continue to pay for the cellular subscription costs. The annual fee does include the annual costs for the customer portal and technical support for improving customer service and providing greater access to water usage information.

Table No. 6-1
Estimated Water Meters and Mobile AMR System Supply Cost

Item Description	Quantity	Units	Unit Price	Estimated Total
5/8-inch Meter	6,573	Ea.	\$140	\$920,220
3/4-inch Meter	20	Ea.	\$175	\$3,500
1-inch Meter	158	Ea.	\$230	\$36,340
1 1/2-inch Meter	28	Ea.	\$615	\$17,220
2-inch Meter	39	Ea.	\$770	\$30,030
3-inch Meter	8	Ea.	\$1,950	\$15,600
4-inch Meter	5	Ea.	\$2,750	\$13,750
6-inch Meter	1	Ea.	\$4,850	\$4,850
Water Meter Subtotal:				\$1,041,510
RF Endpoint	6,832	Ea.	\$130	\$888,160
Software & Billing Interface	1	L.S.	\$15,500	\$15,500
Vehicle Mobile Collector	1	L.S.	\$14,000	\$14,000
Handheld	2	L.S.	\$9,000	\$18,000
Training	1	L.S.	\$3,500	\$3,500
Water Meters and AMR System Subtotal:				\$1,980,670
Construction Contingency (10%):				\$198,100
Engineering:				\$73,000
Total Estimated Cost:				\$2,251,770
Annual AMR Support Fee	1	Year	\$3,500	\$3,500

Tables No. 6-1, 6-2, and 6-3 include the supply costs for new water meters and RF endpoints and the supply and installation costs for an AMR/AMI system. The engineering costs associated with the procurement of the water meters and meter reading system and 10-percent contingency are included in the budgetary costs. According to Tables No. 6-1, 6-2 and 6-3 the initial costs for an AMI traditional fixed network system are higher than that of a mobile AMR system and cellular AMI system due to the infrastructure required to implement a private radio frequency fixed network. Cellular infrastructure is existing and is owned and maintained by the cellular service provider. Monthly service fees are applied per account in a cellular system. These monthly service fees and annual support costs listed at the end of each table should be considered when comparing each of the three AMR/AMI cost options as the annual support costs and cellular subscription costs have a significant impact on the long-term, 20-year life cycle costs incurred by the BPW for each system.

Table No. 6-2
Estimated Water Meters and Traditional Fixed Network AMI Supply Cost

Item Description	Quantity	Units	Unit Price	Estimated Total
5/8-inch Meter	6,573	Ea.	\$140	\$920,220
3/4-inch Meter	20	Ea.	\$175	\$3,500
1-inch Meter	158	Ea.	\$230	\$36,340
1 1/2-inch Meter	28	Ea.	\$615	\$17,220
2-inch Meter	39	Ea.	\$770	\$30,030
3-inch Meter	8	Ea.	\$1,950	\$15,600
4-inch Meter	5	Ea.	\$2,750	\$13,750
6-inch Meter	1	Ea.	\$4,850	\$4,850
Water Meter Subtotal:				\$1,041,510
RF Endpoint	6,832	Ea.	\$130	\$888,160
Software & Billing Interface	1	L.S.	\$35,000	\$35,000
AMI System Hardware	1	L.S.	\$50,000	\$50,000
AMI System Installation	1	L.S.	\$100,000	\$100,000
Handheld Device	2	Ea.	\$9,000	\$18,000
Training	1	L.S.	\$5,000	\$5,000
Water Meters and Fixed Network AMI Subtotal:				\$2,137,670
Construction Contingency (10%):				\$213,800
Engineering:				\$73,000
Total Estimated Cost:				\$2,424,470
Annual fee for AMI Support and Customer Portal	1	Year	\$30,000	\$30,000

Table No. 6-3
Estimated Water Meters and Cellular Network AMI Supply Cost

Item Description	Quantity	Units	Unit Price	Estimated Total
5/8-inch Meter	6,573	Ea.	\$140	\$920,220
3/4-inch Meter	20	Ea.	\$175	\$3,500
1-inch Meter	158	Ea.	\$230	\$36,340
1 1/2-inch Meter	28	Ea.	\$615	\$17,220
2-inch Meter	39	Ea.	\$770	\$30,030
3-inch Meter	8	Ea.	\$1,950	\$15,600
4-inch Meter	5	Ea.	\$2,750	\$13,750
6-inch Meter	1	Ea.	\$4,850	\$4,850
Water Meter Subtotal:				\$1,041,510
Cellular Endpoint	6,832	Ea.	\$130	\$888,160
Software & Billing Interface	1	L.S.	\$35,000	\$35,000
First Year Cellular Subscription Costs	1	Ea.	\$73,000	\$73,000
Handheld Device	2	L.S.	\$9,000	\$18,000
Training	1	L.S.	\$5,000	\$5,000
Water Meters and Cellular System AMI Subtotal:				\$2,060,670
Construction Contingency (10%):				\$206,100
Engineering:				\$73,000
Total Estimated Cost:				\$2,339,770
Annual Cellular Subscription Cost with System Support and Customer Portal	1	Year	\$73,000	\$73,000

Meter Installation Cost Analysis

The BPW plans to retain the services of a meter installation contractor to complete the meter replacement program over a six (6) to eight (8) month duration. This would take the burden of coordination and the majority of the labor efforts off BPW staff. Table No. 6-4 shows a breakdown of estimated meter installation costs for an installation contractor. The total estimated cost for an installation contractor to complete the meter replacement program for the Fairhaven system is approximately \$967,000 as shown in Table No. 6-4.

In determining the unit prices for meter installations, it was assumed that 2.5-percent of meters in the system will require a Non-Standard (NS) Type 1 installation which may involve additional items such as new tail pieces, small fittings, and additional labor. It was also assumed that 2.5-percent of meters will require a NS Type 2 installation that

may require new valves or a meter setter to relocate the water meter away from a wall or corner. An additional 50 hours was budgeted for NS Type 3 installations for more extensive plumbing work beyond NS Type 1 and NS Type 2 installations using the MA prevailing wage rate for a licensed plumber marked up by 40-percent for labor markups, overhead, and profit. Five percent of the installation cost subtotal was added for contractor mobilization, an additional 10-percent was included for contingency, and the engineering costs to prepare bidding documents for installation services and construction administration services during meter installation was included in Table No. 6-4.

Table No. 6-4
Estimated Water Meter and RF Endpoint Installation Contract Costs

Item Description	Quantity	Units	Unit Price	Estimated Total
Install 5/8-inch Water Meter and Endpoint	6,573	Ea.	\$110	\$723,030
Install 3/4-inch Water Meter and Endpoint	20	Ea.	\$115	\$2,300
Install 1-inch Water Meter and Endpoint	158	Ea.	\$135	\$21,330
Install 1 1/2-inch Water Meter and Endpoint	28	Ea.	\$220	\$6,160
Install 2-inch Water Meter and Endpoint	39	Ea.	\$275	\$10,725
Install 3-inch Water Meter and Endpoint	8	Ea.	\$525	\$4,200
Install 4-inch Water Meter and Endpoint	5	Ea.	\$790	\$3,950
Install 6-inch Water Meter and Endpoint	1	Ea.	\$1,500	\$1,500
Additional Labor (NS Type 3 Installs)	50	Hrs.	\$100	\$5,000
Subtotal:				\$778,195
Mobilization (5%):				\$39,000
Contingency (10%):				\$81,700
Engineering and Construction Administration:				\$68,000
Total Estimated Installation Cost:				\$966,895

7.0 Conclusions

Implementation Schedule

The RFP will solicit proposals for water meters, endpoints, and an AMR or AMI system for a two (2) or three (3) year agreement to allow for the purchase of equipment at the proposal price for the term of the agreement. The proposal will be required to list pricing

of equipment for each year of the agreement. Depending on the BPW's funding and storage space for meters and endpoints, all hardware and equipment required to complete the meter replacement program could be purchased in full at the beginning of the project or at any point over the course of the two (2) or three (3) year agreement. Coordination with the supply vendor will be necessary to confirm meters and endpoints can be produced to meet the needs of the BPW's installation schedule.

In conjunction with the preparation of this evaluation, a preliminary schedule was prepared to understand the potential time required to complete the meter replacement program. The preparation of RFP documents, soliciting and receiving proposals, reviewing and evaluating proposals, interviewing vendors, and awarding a contract for the supply of water meters and supply and installation of an AMR/AMI system can be completed by the end of July 2020 with bid opening for the meter installation services in early September 2020. Implementation of the new AMI network, if the BPW elects to install a fixed network AMI system, can be completed by the end of October 2020 with meter and endpoint installations starting in November 2020. The water meter and endpoint installation program could be completed within a six (6) to eight (8) month contract if done by an installation contractor so that the meter replacement program was completed between April 2021 and June 2021.

Water Meter and AMR/AMI Recommendations

As previously mentioned, AWWA recommends replacement of small water meter, less than 2-inch every 15 years. Upon review of the existing meter ages for the BPW of Fairhaven, more than 72-percent of customer meters have been in service in excess of 15 years. The age of existing meters suggests that there may be under-registering water meters not capturing approximately 4.8-percent of the BPW's annual water usage per the 2018 Annual Statistical Report. The annual estimated revenue loss for water billings due to under registering water meters is \$137,000. Further, the annual estimated revenue loss for sewer billings is \$174,000. The total annual estimated revenue loss due to under registering water meters is \$311,000. If action is not taken to replace the BPW's water meters, the amount of unbilled water usage will continue to increase.

Budgetary capital costs for the supply of water meters, endpoints, and the supply and installation of an AMR drive-by, traditional fixed network AMI, or cellular system AMI ranged from approximately \$2,252,000 to \$2,425,000. The capital costs include the procurement of equipment, engineering costs for design and bidding, and contingency. The capital costs can be used for comparison of procurement costs for the AMR/AMI options, but annual support costs and cellular subscription costs (in the case of a cellular AMI system), listed at the end of each table should be considered. When comparing each of the three AMR/AMI cost options, the annual support costs and cellular subscription costs have a significant impact on the long-term, 20-year life cycle costs that will be incurred by the BPW for each system. The total estimated cost for an installation contractor to complete the meter replacement program is approximately \$967,000.

Upon review of the BPW's existing metering system and billing process, Tata & Howard recommends the following improvements:

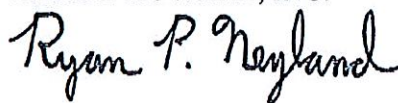
1. Replace, at a minimum, all water meters with a service life greater than 10 years. Water meters that are less than 10 years old may remain in the system if the meters are compatible with the new AMR/AMI system. It is our understanding that the BPW prefers to replace the meters in the system at the same time it procures and installs the new AMR/AMI network.
2. Replace the existing water meter reading system with either a mobile AMR system, traditional fixed network AMI system or a cellular network AMI system. However, based on the goals and major priorities of the BPW as presented in this evaluation, implementing an AMI system is recommended.
3. Utilize an evaluation criteria based RFP process to procure water meters and endpoints and to furnish and install the AMI system.
4. Implement a phased meter and endpoint replacement program with an installation contractor to be completed within a six (6) to eight (8) month contract.
5. Resolve any outstanding issues within the billing system prior to the commencement of the meter replacement program. Outstanding billing system issues will cause confusion during the phased implementation period.
6. Review the options for a mass meter transfer file with the billing system provider to confirm an application is available to automatically transfer data collected in the field into the billing system to prevent the need for manual data entry, save time, and eliminate human error in data transfer.
7. Conduct public and governmental education and outreach programs.

During the course of this technical evaluation, the undersigned served as Project Manager, Ms. Allison M. Shivers served as Project Engineer, Mr. Mitchell T. Garon served as Engineer, Ms. Karen L. Gracey, P.E. provided technical reviews, and Mr. Paul B. Howard, P.E. served as Project Officer.

At this time, we wish to express our continued appreciation to the BPW for their participation in this evaluation and for their help in collecting information and data. We appreciate the opportunity to assist the BPW on this important project.

Sincerely,

TATA & HOWARD, INC.



Ryan P. Neyland, P.E.
Vice President

3/10/2020

Meter evaluation - vfurtado@fairhaven-ma.gov - Town of Fairhaven Mail

From: Patrick O'Neale <PONeale@tataandhoward.com>
Sent: Monday, October 15, 2018 11:17 AM
To: Vincent Furtado <vfurtado@fairhaven-ma.gov>
Subject: RE: Meter evaluation

The budget we prepared for 'drive by' AMR in 2015 is attached. If you think drive by is where you are headed, then maybe bump this to \$1.5M. Most other systems are higher.

**Attachment C**
Mark Rees <mrees@fairhaven-ma.gov>**Gulf Resources, Inc. Beer and Wine license**

2 messages

Jeffrey M. Lovely, Esq. <lovelylaw3000@gmail.com>

Mon, Apr 13, 2020 at 1:33 PM

To: Loreen Pina <lpina@fairhaven-ma.gov>, mrees@fairhaven-ma.gov

Cc: jcarey@tre.state.ma.us, Rich Carrigg <rcarrigg@verizon.net>

Hello Mr. Rees and Ms. Pina:

I hope you are safe and well in these interesting times. I got a call today from Jack Carey, the ABCC investigator working on this matter. Mr. Carrigg's CORI revealed an old conviction, from 1992, for attaching license plates. Mr. Carey advised that, although the matter is minor and not an obstacle to issuance of the license, the matter was not disclosed in the application so we needed to amend the application (subject page only) and provide an explanatory affidavit.

Accordingly, please see attached correspondence, amended application (page 2) and affidavit.

I am also fedexing this to your office.

Please do not hesitate to call with any questions.

Thank you.

Jeffrey M. Lovely, Counselor At Law
Post Office Box 510
6 Railroad Ave.
Foxboro MA 02035
Tel: 508 698 3000
cell: 508 243 3983
lovelylaw3000@gmail.com

Please update your address book to reflect my new gmail address!

 grifairhaven.pdf
88K**Mark Rees** <mrees@fairhaven-ma.gov>

Tue, Apr 14, 2020 at 1:39 PM

To: "Jeffrey M. Lovely, Esq." <lovelylaw3000@gmail.com>, Vicki Oliveira <vpaquette@fairhaven-ma.gov>

Cc: Loreen Pina <lpina@fairhaven-ma.gov>, jcarey@tre.state.ma.us, Rich Carrigg <rcarrigg@verizon.net>

Atty. Lovely, I will add this disclosure to the Selectmen's agenda for their next meeting on April 27th.

[Quoted text hidden]

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Mark H. Rees
Town Administrator
Town of Fairhaven
Fairhaven Town Hall
40 Center Street, Fairhaven, MA 02719
(508) 979-4023
mrees@fairhaven-ma.gov

Jeffrey M. Lovely, Esq.
Counselor At Law
6 Railroad Ave.
Foxboro MA 02035
508 698 3000 lovelylaw3000@gmail.com Fax 508 543 0798

April 13, 2020

Mr. Jack Carey, ABCC (via email: jcarey@tre.state.ma.us)

VIA FEDEX; (via email: lpina@fairhaven-ma.gov; mrees@fairhaven-ma.gov)

Town of Fairhaven
Board of Selectmen
40 Center Street
Fairhaven MA 02719

Re: Gulf Resources, Inc. Off premises wine and malt license
277 Bridge Street Fairhaven MA

Dear Mr. Carey, Mr. Rees, Ms. Pina and Board:

I was contacted today by Mr. Carey, the ABCC investigator who is processing this application. Mr. Carey indicated that Richard Carrigg's CORI report indicated that he does have a conviction on his record, where he had initially indicated on his application that he had no such convictions.

Mr. Carey requested that we submit a revised Page 2 of the application—on which we have changed the answer to the Criminal History question from no to yes—and an affidavit providing the details of any and all convictions.

The revised page 2 and affidavit are attached. We apologize for answering the question incorrectly.

Per Mr. Carey, the revised page 2 and the affidavit should be added to the town's file for this application.

"Problems Solved and Avoided"

Please do not hesitate to call with any questions.

Thank you.

Very truly yours,
Jeffrey M. Lovely, Esq.

6896.000/Enc.

"Problems Solved and Avoided"

APPLICATION FOR A NEW LICENSE

5. CORPORATE STRUCTURE

Entity Legal Structure	<input type="text" value="Corporation"/>	Date of Incorporation	<input type="text" value="Jun 16, 1995"/>
State of Incorporation	<input type="text" value="MA"/>	Is the Corporation publicly traded? <input type="radio"/> Yes <input checked="" type="radio"/> No	

6. PROPOSED OFFICERS, STOCK OR OWNERSHIP INTEREST

List all individuals or entities that will have a direct or indirect, beneficial or financial interest in this license (E.g. Stockholders, Officers, Directors, LLC Managers, LLP Partners, Trustees etc.). Attach additional page(s) provided, if necessary, utilizing Addendum A.

- The individuals and titles listed in this section must be identical to those filed with the Massachusetts Secretary of State.
- The individuals identified in this section, as well as the proposed Manager of Record, must complete a CORI Release Form.
- Please note the following statutory requirements for Directors and LLC Managers:
On Premises (E.g. Restaurant/ Club/Hotel) Directors or LLC Managers - At least 50% must be US citizens;
Off Premises (Liquor Store) Directors or LLC Managers - All must be US citizens and a majority must be Massachusetts residents.
- If you are a Multi-Tiered Organization, please attach a flow chart identifying each corporate interest and the individual owners of each entity as well as the Articles of Organization for each corporate entity. Every individual must be identified in Addendum A.

Name of Principal	Residential Address	SSN	DOB
Richard E. Carrigg	[REDACTED]	[REDACTED]	[REDACTED]
Title and or Position	Percentage of Ownership	Director/ LLC Manager US Citizen	MA Resident
Treasurer	50	<input checked="" type="radio"/> Yes <input type="radio"/> No	<input checked="" type="radio"/> Yes <input type="radio"/> No
Name of Principal	Residential Address	SSN	DOB
John P. Carrigg	[REDACTED]	[REDACTED]	[REDACTED]
Title and or Position	Percentage of Ownership	Director/ LLC Manager US Citizen	MA Resident
	50	<input checked="" type="radio"/> Yes <input type="radio"/> No	<input checked="" type="radio"/> Yes <input type="radio"/> No
Name of Principal	Residential Address	SSN	DOB
Title and or Position	Percentage of Ownership	Director/ LLC Manager US Citizen	MA Resident
		<input type="radio"/> Yes <input type="radio"/> No	<input type="radio"/> Yes <input type="radio"/> No
Name of Principal	Residential Address	SSN	DOB
Title and or Position	Percentage of Ownership	Director/ LLC Manager US Citizen	MA Resident
		<input type="radio"/> Yes <input type="radio"/> No	<input type="radio"/> Yes <input type="radio"/> No
Name of Principal	Residential Address	SSN	DOB
Title and or Position	Percentage of Ownership	Director/ LLC Manager US Citizen	MA Resident
		<input type="radio"/> Yes <input type="radio"/> No	<input type="radio"/> Yes <input type="radio"/> No

Additional pages attached? ☐ Yes ☒ No

CRIMINAL HISTORY

Has any individual listed in question 6, and applicable attachments, ever been convicted of a State, Federal or Military Crime? If yes, attach an affidavit providing the details of any and all convictions.

☒ Yes ☐ No

MANAGEMENT AGREEMENT

Are you requesting approval to utilize a management company through a management agreement? Please provide a copy of the management agreement.

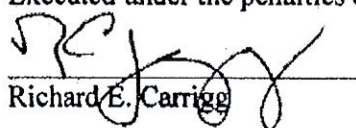
☐ Yes ☒ No

AFFIDAVIT OF RICHARD E. CARRIGG
Re: Prior Criminal Conviction

I, Richard E. Carrigg, of [REDACTED], being under oath,
hereby state as follows with regard to a prior criminal conviction:

1. I am a Mass. Maritime graduate and spent several years in the merchant marine service.
2. In 1992, I was working on a ship when my wife contacted me saying that my son, Stephen, was seriously ill and that I needed to get home as soon as possible to assist with his care.
3. The ship docked in Somerset, Massachusetts.
4. At the time, I had two cars parked in Somerset. One would not start; the other would start but the plates were expired.
5. Because of the emergency situation, I unwisely put the plates from one car onto the other and began to drive home.
6. I was pulled over within a mile or so, returned to the ship, cited, and the car was towed and impounded.
7. I was cited for and convicted of driving an unregistered motor vehicle and attaching plates.
8. When I completed my application for the subject wine and malt license, I was under the impression based on the passage of time, the nature of the offense and prior CORI reports from other license applications that this matter was not required to be disclosed.

Executed under the penalties of perjury this 13th day of April, 2020.


Richard E. Carrigg



Attachment D

The Commonwealth of Massachusetts
Alcoholic Beverages Control Commission
95 Fourth Street, Suite 3, Chelsea, MA 02150-2358
www.mass.gov/abcc

APPLICATION FOR A NEW LICENSE

Municipality

1. LICENSE CLASSIFICATION INFORMATION

ON/OFF-PREMISES	TYPE	CATEGORY	CLASS
<input type="text" value="Off-Premises-15"/>	<input type="text" value="\$15 Package Store"/>	<input type="text" value="Wines and Malt Beverages"/>	<input type="text" value="Annual"/>

Please provide a narrative overview of the transaction(s) being applied for. On-premises applicants should also provide a description of the intended theme or concept of the business operation. Attach additional pages, if necessary.

Applicant is developing a new gasoline station and convenience store at 277 Bridge Street and seeks a wine and malt license in order to better serve its customers.

Is this license application pursuant to special legislation?

☐ Yes ☒ No

Chapter

Acts of

2. BUSINESS ENTITY INFORMATION

The entity that will be issued the license and have operational control of the premises.

Entity Name

FEIN

DBA

Manager of Record

Street Address

Phone

Email

Alternative Phone

Website

3. DESCRIPTION OF PREMISES

Please provide a complete description of the premises to be licensed, including the number of floors, number of rooms on each floor, any outdoor areas to be included in the licensed area, and total square footage. You must also submit a floor plan.

The subject premises consists of a to be constructed gasoline station, convenience store, deli and coffee shop with drive through located at 277 Bridge Street in Fairhaven, Massachusetts. The facility will have one main entrance plus two employee only entrances and one main exit plus two employee only/emergency exits. Floor plan attached. There will be no indoor seating.

Total Square Footage:

Number of Entrances:

Seating Capacity:

Number of Floors

Number of Exits:

Occupancy Number:

4. APPLICATION CONTACT

The application contact is the person whom the licensing authorities should contact regarding this application.

Name:

Phone:

Title:

Email:

APPLICATION FOR A NEW LICENSE

5. CORPORATE STRUCTURE

Entity Legal Structure	<input type="text" value="Corporation"/>	Date of Incorporation	<input type="text" value="Jun 16, 1995"/>
State of Incorporation	<input type="text" value="MA"/>	Is the Corporation publicly traded? <input type="radio"/> Yes <input checked="" type="radio"/> No	

6. PROPOSED OFFICERS, STOCK OR OWNERSHIP INTEREST

List all individuals or entities that will have a direct or indirect, beneficial or financial interest in this license (E.g. Stockholders, Officers, Directors, LLC Managers, LLP Partners, Trustees etc.). Attach additional page(s) provided, if necessary, utilizing Addendum A.

- The individuals and titles listed in this section must be identical to those filed with the Massachusetts Secretary of State.
- The individuals identified in this section, as well as the proposed Manager of Record, must complete a CORI Release Form.
- Please note the following statutory requirements for Directors and LLC Managers:
On Premises (E.g. Restaurant/ Club/Hotel) Directors or LLC Managers - At least 50% must be US citizens;
Off Premises (Liquor Store) Directors or LLC Managers - All must be US citizens and a majority must be Massachusetts residents.
- If you are a Multi-Tiered Organization, please attach a flow chart identifying each corporate interest and the individual owners of each entity as well as the Articles of Organization for each corporate entity. Every individual must be identified in Addendum A.

Name of Principal	Residential Address	SSN	DOB
Richard E. Carrigg	[REDACTED]	[REDACTED]	[REDACTED]

Title and or Position	Percentage of Ownership	Director/ LLC Manager	US Citizen	MA Resident
Treasurer / SECRETARY / VP / DIRECTOR	50	<input checked="" type="radio"/> Yes <input type="radio"/> No	<input checked="" type="radio"/> Yes <input type="radio"/> No	<input checked="" type="radio"/> Yes <input type="radio"/> No

Name of Principal	Residential Address	SSN	DOB
John P. Carrigg	[REDACTED]	[REDACTED]	[REDACTED]

Title and or Position	Percentage of Ownership	Director/ LLC Manager	US Citizen	MA Resident
PRESIDENT / DIRECTOR	50	<input checked="" type="radio"/> Yes <input type="radio"/> No	<input checked="" type="radio"/> Yes <input type="radio"/> No	<input checked="" type="radio"/> Yes <input type="radio"/> No

Name of Principal	Residential Address	SSN	DOB

Title and or Position	Percentage of Ownership	Director/ LLC Manager	US Citizen	MA Resident
		<input type="radio"/> Yes <input type="radio"/> No	<input type="radio"/> Yes <input type="radio"/> No	<input type="radio"/> Yes <input type="radio"/> No

Name of Principal	Residential Address	SSN	DOB

Title and or Position	Percentage of Ownership	Director/ LLC Manager	US Citizen	MA Resident
		<input type="radio"/> Yes <input type="radio"/> No	<input type="radio"/> Yes <input type="radio"/> No	<input type="radio"/> Yes <input type="radio"/> No

Name of Principal	Residential Address	SSN	DOB

Title and or Position	Percentage of Ownership	Director/ LLC Manager	US Citizen	MA Resident
		<input type="radio"/> Yes <input type="radio"/> No	<input type="radio"/> Yes <input type="radio"/> No	<input type="radio"/> Yes <input type="radio"/> No

Additional pages attached? ☐ Yes ☒ No

CRIMINAL HISTORY

Has any individual listed in question 6, and applicable attachments, ever been convicted of a State, Federal or Military Crime? If yes, attach an affidavit providing the details of any and all convictions.

☒ Yes ☐ No

MANAGEMENT AGREEMENT

Are you requesting approval to utilize a management company through a management agreement?
Please provide a copy of the management agreement.

☐ Yes ☒ No