

WATER CONSERVATION ROI WORKSHEET

DATA ENTRY

A) Water Cost / CCF
 B) Sewer Cost / CCF

C) Natural Gas Cost / Therm
 D) Electrical Cost / kWh

Submission Title: **Activity 1-1: Replace 3.5 GPF Water Closet with 1.28 GPF Water Closet**

1. Determine Gallons Per Day (GPD) water usage of current equipment to be retrofitted/replaced.

| USE #1 | |
|--------|----------------------------------|
| 6 | Average uses per day |
| 3.5 | Gallons per use |
| 21 | Total gallons used per day (GPD) |

| USE #2 (If Necessary) | |
|-----------------------|----------------------------------|
| <input type="text"/> | Average uses per day |
| <input type="text"/> | Gallons per use |
| 0 | Total gallons used per day (GPD) |

E) GPD (Current)

2. Determine Gallons Per Day (GPD) water usage of NEW equipment:

| | |
|------|----------------------------------|
| 6 | Average uses per day |
| 1.28 | Gallons per use |
| 7.68 | Total gallons used per day (GPD) |

| USE #2 (If Necessary) | |
|-----------------------|----------------------------------|
| <input type="text"/> | Average uses per day |
| <input type="text"/> | Gallons per use |
| 0 | Total gallons used per day (GPD) |

F) GPD (New)

3. Determine the water savings difference resulting from the project.

E) 21.00 GPD (current equipment) - F) 7.7 GPD (new equipment) = G) GPD Water Savings

4. Convert gallons to hundred cubic feet (CCF) per year:

G) 13.32 GPD X H) Work Days / Year (260 Default) / 748 Gallons / CCF = I) CCF / Year Water Savings

WATER CONSERVATION ROI WORKSHEET

DATA ENTRY

A) Water Cost / CCF
 B) Sewer Cost / CCF

C) Natural Gas Cost / Therm
 D) Electrical Cost / kWh

Submission Title:

Activity #1-2: Replace 3.5 GPF Water Closet with 1.6/1.1 GPF Dual Flush Water Closet

1. Determine Gallons Per Day (GPD) water usage of current equipment to be retrofitted/replaced.

| USE #1 | |
|--------|----------------------------------|
| 6 | Average uses per day |
| 3.5 | Gallons per use |
| 21 | Total gallons used per day (GPD) |

| USE #2 (If Necessary) | |
|-----------------------|----------------------------------|
| | Average uses per day |
| | Gallons per use |
| 0 | Total gallons used per day (GPD) |

E) GPD (Current)

2. Determine Gallons Per Day (GPD) water usage of NEW equipment:

| | |
|-----|----------------------------------|
| 4 | Average uses per day |
| 1.1 | Gallons per use |
| 4.4 | Total gallons used per day (GPD) |

| USE #2 (If Necessary) | |
|-----------------------|----------------------------------|
| 2 | Average uses per day |
| 1.6 | Gallons per use |
| 3.2 | Total gallons used per day (GPD) |

F) GPD (New)

3. Determine the water savings difference resulting from the project.

E) 21.00 GPD (current equipment) - F) 7.6 GPD (new equipment) = G) GPD Water Savings

4. Convert gallons to hundred cubic feet (CCF) per year:

G) 13.40 GPD X H) Work Days / Year (260 Default) / 748 Gallons / CCF = I) CCF / Year Water Savings

WATER CONSERVATION ROI WORKSHEET

DATA ENTRY

A) **\$4.00** Water Cost / CCF
 B) **\$8.89** Sewer Cost / CCF

C) Natural Gas Cost / Therm
 D) Electrical Cost / kWh

Submission Title:

Activity 2-1: Retrofit 1.6 GPF Water Closet Flushometer with 1.6/1.1 GPF Dual Flushometer

1. Determine Gallons Per Day (GPD) water usage of current equipment to be retrofitted/replaced.

USE #1

| | |
|------------|----------------------------------|
| 6 | Average uses per day |
| 1.6 | Gallons per use |
| 9.6 | Total gallons used per day (GPD) |

USE #2 (If Necessary)

| | |
|-------------------|----------------------------------|
| | Average uses per day |
| | Gallons per use |
| 0 | Total gallons used per day (GPD) |

E) **9.60** GPD (Current)

2. Determine Gallons Per Day (GPD) water usage of NEW equipment:

| | |
|------------|----------------------------------|
| 4 | Average uses per day |
| 1.1 | Gallons per use |
| 4.4 | Total gallons used per day (GPD) |

USE #2 (If Necessary)

| | |
|------------|----------------------------------|
| 2 | Average uses per day |
| 1.6 | Gallons per use |
| 3.2 | Total gallons used per day (GPD) |

F) **7.60** GPD (New)

3. Determine the water savings difference resulting from the project.

E) **9.60** GPD (current equipment) - F) **7.6** GPD (new equipment) = G) **2.00** GPD Water Savings

4. Convert gallons to hundred cubic feet (CCF) per year:

G) **2.00** GPD X H) **365** Work Days / Year (260 Default) / 748 Gallons / CCF = I) **0.98** CCF / Year Water Savings

5. Determine annual water bill cost savings:

I) **0.98** CCF X A) **\$4.00** Water Cost / CCF = J) **\$3.90** Water Bill Savings (1st Year)

6. Determine the annual sewer cost savings:

I) **0.98** CCF X B) **\$8.89** Sewer Cost / CCF = K) **\$8.68** Sewer Bill Savings (1st Year)

WATER CONSERVATION ROI WORKSHEET

DATA ENTRY

A) **\$4.00** Water Cost / CCF
 B) **\$8.89** Sewer Cost / CCF

C) Natural Gas Cost / Therm
 D) Electrical Cost / kWh

Submission Title: **Activity 2-2: Replace 1.6/1.1 GPF Dual Flush Water Closet with 1.28/0.8 GPF Water Closet**

1. Determine Gallons Per Day (GPD) water usage of current equipment to be retrofitted/replaced.

| USE #1 | USE #2 (If Necessary) | |
|------------|-----------------------|----------------------------------|
| 4 | 2 | Average uses per day |
| 1.1 | 1.6 | Gallons per use |
| 4.4 | 3.2 | Total gallons used per day (GPD) |

E) 7.60 GPD (Current)

2. Determine Gallons Per Day (GPD) water usage of NEW equipment:

| USE #1 | USE #2 (If Necessary) | |
|------------|-----------------------|----------------------------------|
| 4 | 2 | Average uses per day |
| 0.8 | 1.28 | Gallons per use |
| 3.2 | 2.56 | Total gallons used per day (GPD) |

F) 5.76 GPD (New)

3. Determine the water savings difference resulting from the project.

E) 7.60 GPD (current equipment) - **F) 5.8** GPD (new equipment) = **G) 1.84** GPD Water Savings

4. Convert gallons to hundred cubic feet (CCF) per year:

G) 1.84 GPD X **H) 365** Work Days / Year (260 Default) / **748** Gallons / CCF = **I) 0.90** CCF / Year Water Savings

5. Determine annual water bill cost savings:

I) 0.90 CCF X **A) \$4.00** Water Cost / CCF = **J) \$3.59** Water Bill Savings (1st Year)

6. Determine the annual sewer cost savings:

I) 0.90 CCF X **B) \$8.89** Sewer Cost / CCF = **K) \$7.98** Sewer Bill Savings (1st Year)

WATER CONSERVATION ROI WORKSHEET

DATA ENTRY

A) **\$4.00** Water Cost / CCF
 B) **\$8.89** Sewer Cost / CCF

C) **\$0.343** Natural Gas Cost / Therm
 D) **\$0.048** Electrical Cost / kWh

Submission Title:

Activity 3-1: Replace 2.5 GPM Shower Head with 1.5 GPM Shower Head

1. Determine Gallons Per Day (GPD) water usage of current equipment to be retrofitted/replaced.

| USE #1 | |
|-------------|----------------------------------|
| 7.0 | Average uses per day |
| 2.5 | Gallons per use |
| 17.5 | Total gallons used per day (GPD) |

| USE #2 (If Necessary) | |
|-----------------------|----------------------------------|
| 0.0 | Average uses per day |
| 0.0 | Gallons per use |
| 0.0 | Total gallons used per day (GPD) |

E) **17.5** GPD (Current)

2. Determine Gallons Per Day (GPD) water usage of NEW equipment:

| USE #1 | |
|-------------|----------------------------------|
| 7.0 | Average uses per day |
| 1.5 | Gallons per use |
| 10.5 | Total gallons used per day (GPD) |

| USE #2 (If Necessary) | |
|-----------------------|----------------------------------|
| 0.0 | Average uses per day |
| 0.0 | Gallons per use |
| 0.0 | Total gallons used per day (GPD) |

F) **10.5** GPD (New)

3. Determine the water savings difference resulting from the project.

E) **17.5** GPD (current equipment) - F) **10.5** GPD (new equipment) = G) **7.00** GPD Water Savings

4. Convert gallons to hundred cubic feet (CCF) per year:

G) **7.0** GPD X H) **260** Work Days / Year (260 Default) / 748 Gallons / CCF = I) **2.43** CCF / Year Water Savings

5. Determine annual water bill cost savings:

I) **2.4** CCF X A) **\$4.00** Water Cost / CCF = J) **\$9.73** Water Bill Savings (1st Year)

6. Determine the annual sewer cost savings:

I) **2.4** CCF X B) **\$8.89** Sewer Cost / CCF = K) **\$21.63** Sewer Bill Savings (1st Year)

7. Use only for Hot Water Savings when Hot Water is made via Natural Gas or Electric Hot Water Heater

- a) Enter Corresponding Utility Rate
- b) Gallons of Water Saved per Year **[G x H]**
- c) % **HOT** Water Saved/ Yr; [(T Mixed - T Cold) / (T Hot - T Cold)]
- d) Gallons of Hot Water Saved per Year; [b] x c]
- e) Pounds per Gallon of Water
- f) Total Pounds of Water; [d] x c]
- g) Enter Delta T (Outgoing T - Incoming T)
- h) Total BTU's (Total Pounds of Water x Delta T); [f] x g]
- i) Enter Water Heater Efficiency Percentage
- j) BTU Input (Total BTU / Heater Efficiency); [h] / i]
- k) Therms (NG) [j] / 100,000]; kWh (Electric) Consumed [j] / 3,414]
- l) Total Utility Cost Savings (1st Year); [a] x k]

| | Natural Gas HW Heater (Per Therm) | Electric HW Heater (Per kWh) |
|-----------|---|------------------------------------|
| C) | | D) |
| | 1,820 | 1,820 |
| | 78.6% | 78.6% |
| | 1,431 | 1,431 |
| | 8.33 | 8.33 |
| | 15,161 | 15,161 |
| | 70 | 70 |
| | 1,061,242 | 1,061,242 |
| | 70% | 95% |
| | 742,869 | 1,008,180 |
| | 7.43 | 295 |
| L) | \$0.00 | M) \$0.00 |

Default 78.6% @ 105 Mixed; 120 Hot; 50 Cold
 Default 70 (120 degrees - 50 degrees)
 Default 70% for Natural Gas; 95% for Electric
 100,000 BTU's / Therm; 3,413 BTU's / kWh

8. Use only for Hot Water Savings when Hot Water is made via steam to hot water heat exchanger and the steam is made by a Natural Gas or Electric Steam Boiler

- a) Enter Corresponding Utility Rate
- b) Gallons of Water Saved per Year - **[G x H]**
- c) % **HOT** Water Saved/ Yr; [(T Mixed - T Cold) / (T Hot - T Cold)]
- d) Gallons of Hot Water Saved per Year; [b] x c]
- e) Pounds per Gallon of Water
- f) Total Pounds of Water; [d] x c]
- g) Enter Delta T (Outgoing T - Incoming T)
- h) Total End-use Heat BTU's (Total Pounds of Water x Delta T); [f] x g]
- i) BTU's Released when 1 # of Steam Condenses
- j) Pounds of Steam Req'd (Total BTU's / BTU's per # of Steam); [h] x i]
- k) BTU's Required to make 1 Pound of Steam
- l) Total Steam BTU's required [j] x k]
- m) Enter Boiler Fuel to Steam Efficiency
- n) BTU Input (Total BTU / Heater Efficiency); [l] x m]
- o) Therms (NG) [j] / 100,000]; kWh (Electric) Consumed [j] / 3,414]
- p) Total Utility Cost Savings (1st Year); [a] x o]

| | Natural Gas Steam Boiler / Steam HW Heater (Per Gallon) | Electric Steam Boiler / Steam HW Heater (Per Gallon) |
|-----------|---|--|
| C) | | D) |
| | 1,820 | 1,820 |
| | 78.6% | 78.6% |
| | 1,431 | 1,431 |
| | 8.33 | 8.33 |
| | 15,161 | 15,161 |
| | 70 | 70 |
| | 1,061,242 | 1,061,242 |
| | 970 | 970 |
| | 1,094 | 1,094 |
| | 1,150 | 1,150 |
| | 1,258,174 | 1,258,174 |
| | 80% | 100% |
| | 1,006,539 | 1,258,174 |
| | 10.07 | 369 |
| N) | \$0.00 | O) \$0.00 |

Default 78.6% @ 105 Mixed; 120 Hot; 50 Cold
 Default 70 (120 degrees - 50 degrees)
 Default 80% Natural Gas to Steam; 100% Electric to Steam
 100,000 BTU's / Therm; 3,413 BTU's / kWh

9. Use only for when upgrading Natural Gas and Electrical efficiencies

- a) Enter Corresponding Utility Rate
- b) Current Therms (NG), kWh (Electric) consumed / day
- c) Estimated Therms (NG), Kwh (Electric) to be consumed / day
- d) Estimated Therms (NG), Kwh (Electric) savings / day; [b]- c]
- e) Total Utility Cost Savings (1st Year); [a] x d] x **H**

| Natural Gas (Per Therm) | | Electric (Per kWh) | |
|----------------------------|--------|-----------------------|--------|
| C) | | D) | |
| | | | |
| | | | |
| | 0 | | 0 |
| P) | \$0.00 | Q) | \$0.00 |

10. Enter Anticipated Annual Maintenance Savings:

R) **\$0.00** 30-Minute Service Call every 5 Years = 5 Minutes / Year

11. Enter Anticipated Utility Rate Increases

- a) Water
- b) Sewer
- c) Natural Gas
- d) Electrical
- e) Weighted Avg. of a) through d) [Used for **U**) and **W**) calculations]

| |
|-------|
| 0% |
| 0% |
| 0% |
| 0% |
| 0.00% |

12. Determine the Return on Investment **WITHOUT** rebate(s):

S) **\$100** / **J)** **\$9.73** =
 Installed Cost **K)** **\$21.63** =
L) + N) + P) **\$0.00** =
M) + O) + Q) **\$0.00** =
R) **\$0.00** =
T) **\$31.36** =

| | | |
|----------------|------------------|--|
| 10.27 | Water Only | ROI (In Years) WITHOUT Rebate(s) |
| 4.62 | Sewer Only | |
| N/A | Natural Gas Only | |
| N/A | Electric Only | |
| N/A | Maintenance Only | |
| U) 3.19 | Total | |

WATER CONSERVATION ROI WORKSHEET

DATA ENTRY

A) **\$4.00** Water Cost / CCF
 B) **\$8.89** Sewer Cost / CCF

C) **\$0.343** Natural Gas Cost / Therm
 D) **\$0.048** Electrical Cost / kWh

Submission Title:

Activity 3-2: Replace 2.5 GPM Shower Head with 1.5 GPM Shower Head

1. Determine Gallons Per Day (GPD) water usage of current equipment to be retrofitted/replaced.

| USE #1 | |
|-------------|----------------------------------|
| 7.0 | Average uses per day |
| 2.5 | Gallons per use |
| 17.5 | Total gallons used per day (GPD) |

| USE #2 (If Necessary) | |
|-----------------------|----------------------------------|
| 0.0 | Average uses per day |
| 0.0 | Gallons per use |
| 0.0 | Total gallons used per day (GPD) |

E) **17.5** GPD (Current)

2. Determine Gallons Per Day (GPD) water usage of NEW equipment:

| USE #1 | |
|-------------|----------------------------------|
| 7.0 | Average uses per day |
| 1.5 | Gallons per use |
| 10.5 | Total gallons used per day (GPD) |

| USE #2 (If Necessary) | |
|-----------------------|----------------------------------|
| 0.0 | Average uses per day |
| 0.0 | Gallons per use |
| 0.0 | Total gallons used per day (GPD) |

F) **10.5** GPD (New)

3. Determine the water savings difference resulting from the project.

E) **17.5** GPD (current equipment) - F) **10.5** GPD (new equipment) = G) **7.00** GPD Water Savings

4. Convert gallons to hundred cubic feet (CCF) per year:

G) **7.0** GPD X H) **260** Work Days / Year (260 Default) / 748 Gallons / CCF = I) **2.43** CCF / Year Water Savings

5. Determine annual water bill cost savings:

I) **2.4** CCF X A) **\$4.00** Water Cost / CCF = J) **\$9.73** Water Bill Savings (1st Year)

6. Determine the annual sewer cost savings:

I) **2.4** CCF X B) **\$8.89** Sewer Cost / CCF = K) **\$21.63** Sewer Bill Savings (1st Year)

7. Use only for Hot Water Savings when Hot Water is made via Natural Gas or Electric Hot Water Heater

- a) Enter Corresponding Utility Rate
- b) Gallons of Water Saved per Year **[G x H]**
- c) % **HOT** Water Saved/ Yr; [(T Mixed - T Cold) / (T Hot - T Cold)]
- d) Gallons of Hot Water Saved per Year; [b] x c]
- e) Pounds per Gallon of Water
- f) Total Pounds of Water; [d] x e]
- g) Enter Delta T (Outgoing T - Incoming T)
- h) Total BTU's (Total Pounds of Water x Delta T); [f] x g]
- i) Enter Water Heater Efficiency Percentage
- j) BTU Input (Total BTU / Heater Efficiency); [h] / i]
- k) Therms (NG) [j] / 100,000]; kWh (Electric) Consumed [j] / 3,414]
- l) Total Utility Cost Savings (1st Year); [a] x k]

| | Natural Gas HW Heater (Per Therm) | Electric HW Heater (Per kWh) |
|-----------|---|------------------------------------|
| C) | \$0.343 | D) |
| | 1,820 | 1,820 |
| | 78.6% | 78.6% |
| | 1,431 | 1,431 |
| | 8.33 | 8.33 |
| | 15,161 | 15,161 |
| | 70 | 70 |
| | 1,061,242 | 1,061,242 |
| | 70% | 95% |
| | 742,869 | 1,008,180 |
| | 7.43 | 295 |
| L) | \$2.55 | M) |
| | | \$0.00 |

Default 78.6% @ 105 Mixed; 120 Hot; 50 Cold
 Default 70 (120 degrees - 50 degrees)
 Default 70% for Natural Gas; 95% for Electric
 100,000 BTU's / Therm; 3,413 BTU's / kWh

8. Use only for Hot Water Savings when Hot Water is made via steam to hot water heat exchanger and the steam is made by a Natural Gas or Electric Steam Boiler

- a) Enter Corresponding Utility Rate
- b) Gallons of Water Saved per Year - **[G x H]**
- c) % **HOT** Water Saved/ Yr; [(T Mixed - T Cold) / (T Hot - T Cold)]
- d) Gallons of Hot Water Saved per Year; [b] x c]
- e) Pounds per Gallon of Water
- f) Total Pounds of Water; [d] x e]
- g) Enter Delta T (Outgoing T - Incoming T)
- h) Total End-use Heat BTU's (Total Pounds of Water x Delta T); [f] x g]
- i) BTU's Released when 1 # of Steam Condenses
- j) Pounds of Steam Req'd (Total BTU's / BTU's per # of Steam); [h] x i]
- k) BTU's Required to make 1 Pound of Steam
- l) Total Steam BTU's required [j] x k]
- m) Enter Boiler Fuel to Steam Efficiency
- n) BTU Input (Total BTU / Heater Efficiency); [l] x m]
- o) Therms (NG) [j] / 100,000]; kWh (Electric) Consumed [j] / 3,414]
- p) Total Utility Cost Savings (1st Year); [a] x o]

| | Natural Gas Steam Boiler / Steam HW Heater (Per Gallon) | Electric Steam Boiler / Steam HW Heater (Per Gallon) |
|-----------|---|--|
| C) | | D) |
| | 1,820 | 1,820 |
| | 78.6% | 78.6% |
| | 1,431 | 1,431 |
| | 8.33 | 8.33 |
| | 15,161 | 15,161 |
| | 70 | 70 |
| | 1,061,242 | 1,061,242 |
| | 970 | 970 |
| | 1,094 | 1,094 |
| | 1,150 | 1,150 |
| | 1,258,174 | 1,258,174 |
| | 80% | 100% |
| | 1,006,539 | 1,258,174 |
| | 10.07 | 369 |
| N) | \$0.00 | O) |
| | | \$0.00 |

Default 78.6% @ 105 Mixed; 120 Hot; 50 Cold
 Default 70 (120 degrees - 50 degrees)
 Default 80% Natural Gas to Steam; 100% Electric to Steam
 100,000 BTU's / Therm; 3,413 BTU's / kWh

9. Use only for when upgrading Natural Gas and Electrical efficiencies

- a) Enter Corresponding Utility Rate
- b) Current Therms (NG), kWh (Electric) consumed / day
- c) Estimated Therms (NG), Kwh (Electric) to be consumed / day
- d) Estimated Therms (NG), Kwh (Electric) savings / day; [b)- c]
- e) Total Utility Cost Savings (1st Year); [a) x d)] x **H**

| Natural Gas (Per Therm) | | Electric (Per kWh) | |
|----------------------------|--------|-----------------------|--------|
| C) | | D) | |
| | | | |
| | | | |
| | 0 | | 0 |
| P) | \$0.00 | Q) | \$0.00 |

10. Enter Anticipated Annual Maintenance Savings:

R) \$0.00 30-Minute Service Call every 5 Years = 5 Minutes / Year

11. Enter Anticipated Utility Rate Increases

- a) Water
- b) Sewer
- c) Natural Gas
- d) Electrical
- e) Weighted Avg. of a) through d) [Used for **U**) and **W**) calculations]

| |
|-------|
| 0% |
| 0% |
| 0% |
| 0% |
| 0.00% |

12. Determine the Return on Investment WITHOUT rebate(s):

S) \$100 / **J)** \$9.73 =
 Installed Cost **K)** \$21.63 =
L) + N) + P) \$2.55 =
M) + O) + Q) \$0.00 =
R) \$0.00 =
T) \$33.91 =

| | | |
|----------------|------------------|--|
| 10.27 | Water Only | ROI (In Years) WITHOUT Rebate(s) |
| 4.62 | Sewer Only | |
| 39.25 | Natural Gas Only | |
| N/A | Electric Only | |
| N/A | Maintenance Only | |
| U) 2.95 | Total | |

WATER CONSERVATION ROI WORKSHEET

DATA ENTRY

A) **\$4.00** Water Cost / CCF
 B) **\$8.89** Sewer Cost / CCF

C) **\$0.343** Natural Gas Cost / Therm
 D) **\$0.048** Electrical Cost / kWh

Submission Title:

Activity 3-3: Replace 2.5 GPM Shower Head with 1.5 GPM Shower Head

1. Determine Gallons Per Day (GPD) water usage of current equipment to be retrofitted/replaced.

| USE #1 | |
|-------------|----------------------------------|
| 7.0 | Average uses per day |
| 2.5 | Gallons per use |
| 17.5 | Total gallons used per day (GPD) |

| USE #2 (If Necessary) | |
|-----------------------|----------------------------------|
| 0.0 | Average uses per day |
| 0.0 | Gallons per use |
| 0.0 | Total gallons used per day (GPD) |

E) **17.5** GPD (Current)

2. Determine Gallons Per Day (GPD) water usage of NEW equipment:

| USE #1 | |
|-------------|----------------------------------|
| 7.0 | Average uses per day |
| 1.5 | Gallons per use |
| 10.5 | Total gallons used per day (GPD) |

| USE #2 (If Necessary) | |
|-----------------------|----------------------------------|
| 0.0 | Average uses per day |
| 0.0 | Gallons per use |
| 0.0 | Total gallons used per day (GPD) |

F) **10.5** GPD (New)

3. Determine the water savings difference resulting from the project.

E) **17.5** GPD (current equipment) - F) **10.5** GPD (new equipment) = G) **7.00** GPD Water Savings

4. Convert gallons to hundred cubic feet (CCF) per year:

G) **7.0** GPD X H) **260** Work Days / Year (260 Default) / 748 Gallons / CCF = I) **2.43** CCF / Year Water Savings

5. Determine annual water bill cost savings:

I) **2.4** CCF X A) **\$4.00** Water Cost / CCF = J) **\$9.73** Water Bill Savings (1st Year)

6. Determine the annual sewer cost savings:

I) **2.4** CCF X B) **\$8.89** Sewer Cost / CCF = K) **\$21.63** Sewer Bill Savings (1st Year)

7. Use only for Hot Water Savings when Hot Water is made via Natural Gas or Electric Hot Water Heater

- a) Enter Corresponding Utility Rate
- b) Gallons of Water Saved per Year **[G x H]**
- c) % **HOT** Water Saved/ Yr; [(T Mixed - T Cold) / (T Hot - T Cold)]
- d) Gallons of Hot Water Saved per Year; [b x c]
- e) Pounds per Gallon of Water
- f) Total Pounds of Water; [d x e]
- g) Enter Delta T (Outgoing T - Incoming T)
- h) Total BTU's (Total Pounds of Water x Delta T); [f x g]
- i) Enter Water Heater Efficiency Percentage
- j) BTU Input (Total BTU / Heater Efficiency); [h] / i]
- k) Therms (NG) [j] / 100,000]; kWh (Electric) Consumed [j] / 3,414]
- l) Total Utility Cost Savings (1st Year); [a x k]

| | Natural Gas HW Heater (Per Therm) | Electric HW Heater (Per kWh) |
|-----------|-----------------------------------|------------------------------|
| C) | | D) |
| | 1,820 | \$0.048 |
| | 78.6% | 78.6% |
| | 1,431 | 1,431 |
| | 8.33 | 8.33 |
| | 15,161 | 15,161 |
| | 70 | 70 |
| | 1,061,242 | 1,061,242 |
| | 70% | 95% |
| | 742,869 | 1,008,180 |
| | 7.43 | 295 |
| L) | \$0.00 | M) \$14.18 |

Default 78.6% @ 105 Mixed; 120 Hot; 50 Cold
 Default 70 (120 degrees - 50 degrees)
 Default 70% for Natural Gas; 95% for Electric
 100,000 BTU's / Therm; 3,413 BTU's / kWh

8. Use only for Hot Water Savings when Hot Water is made via steam to hot water heat exchanger and the steam is made by a Natural Gas or Electric Steam Boiler

- a) Enter Corresponding Utility Rate
- b) Gallons of Water Saved per Year - **[G x H]**
- c) % **HOT** Water Saved/ Yr; [(T Mixed - T Cold) / (T Hot - T Cold)]
- d) Gallons of Hot Water Saved per Year; [b x c]
- e) Pounds per Gallon of Water
- f) Total Pounds of Water; [d x e]
- g) Enter Delta T (Outgoing T - Incoming T)
- h) Total End-use Heat BTU's (Total Pounds of Water x Delta T); [f x g]
- i) BTU's Released when 1 # of Steam Condenses
- j) Pounds of Steam Req'd (Total BTU's / BTU's per # of Steam); [h x i]
- k) BTU's Required to make 1 Pound of Steam
- l) Total Steam BTU's required [j x k]
- m) Enter Boiler Fuel to Steam Efficiency
- n) BTU Input (Total BTU / Heater Efficiency); [l] x m]
- o) Therms (NG) [j] / 100,000]; kWh (Electric) Consumed [j] / 3,414]
- p) Total Utility Cost Savings (1st Year); [a x o]

| | Natural Gas Steam Boiler / Steam HW Heater (Per Gallon) | Electric Steam Boiler / Steam HW Heater (Per Gallon) |
|-----------|---|--|
| C) | | D) |
| | 1,820 | 1,820 |
| | 78.6% | 78.6% |
| | 1,431 | 1,431 |
| | 8.33 | 8.33 |
| | 15,161 | 15,161 |
| | 70 | 70 |
| | 1,061,242 | 1,061,242 |
| | 970 | 970 |
| | 1,094 | 1,094 |
| | 1,150 | 1,150 |
| | 1,258,174 | 1,258,174 |
| | 80% | 100% |
| | 1,006,539 | 1,258,174 |
| | 10.07 | 369 |
| N) | \$0.00 | O) \$0.00 |

Default 78.6% @ 105 Mixed; 120 Hot; 50 Cold
 Default 70 (120 degrees - 50 degrees)
 Default 80% Natural Gas to Steam; 100% Electric to Steam
 100,000 BTU's / Therm; 3,413 BTU's / kWh

9. Use only for when upgrading Natural Gas and Electrical efficiencies

- a) Enter Corresponding Utility Rate
- b) Current Therms (NG), kWh (Electric) consumed / day
- c) Estimated Therms (NG), Kwh (Electric) to be consumed / day
- d) Estimated Therms (NG), Kwh (Electric) savings / day; [b]- c]
- e) Total Utility Cost Savings (1st Year); [a x d] x **H**

| Natural Gas (Per Therm) | | Electric (Per kWh) | |
|----------------------------|--------|-----------------------|--------|
| C) | | D) | |
| | | | |
| | | | |
| | 0 | | 0 |
| P) | \$0.00 | Q) | \$0.00 |

10. Enter Anticipated Annual Maintenance Savings:

R) \$0.00 30-Minute Service Call every 5 Years = 5 Minutes / Year

11. Enter Anticipated Utility Rate Increases

- a) Water
- b) Sewer
- c) Natural Gas
- d) Electrical
- e) Weighted Avg. of a) through d) [Used for **U**) and **W**) calculations]

| |
|-------|
| 0% |
| 0% |
| 0% |
| 0% |
| 0.00% |

12. Determine the Return on Investment **WITHOUT** rebate(s):

S) \$100 / **J)** \$9.73 =
 Installed Cost **K)** \$21.63 =
L) + N) + P) \$0.00 =
M) + O) + Q) \$14.18 =
R) \$0.00 =
T) \$45.54 =

| | | |
|-----------------------|------------------|--|
| 10.27 | Water Only | ROI (In Years) WITHOUT Rebate(s) |
| 4.62 | Sewer Only | |
| N/A | Natural Gas Only | |
| 7.05 | Electric Only | |
| N/A | Maintenance Only | |
| U) <u>2.20</u> | Total | |

WATER CONSERVATION ROI WORKSHEET

DATA ENTRY

A) **\$4.00** Water Cost / CCF
 B) **\$8.89** Sewer Cost / CCF

C) **\$0.343** Natural Gas Cost / Therm
 D) **\$0.048** Electrical Cost / kWh

Submission Title:

Activity 3-4: Replace 2.5 GPM Shower Head with 1.5 GPM Shower Head

1. Determine Gallons Per Day (GPD) water usage of current equipment to be retrofitted/replaced.

| | | | | | | | | | | | | | |
|--|-------------------------------------|----------------------|------------|-----------------|-------------|----------------------------------|--|------------|----------------------|------------|-----------------|------------|----------------------------------|
| <p>USE #1</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td style="text-align: center;">7.0</td><td>Average uses per day</td></tr> <tr><td style="text-align: center;">2.5</td><td>Gallons per use</td></tr> <tr><td style="text-align: center;">17.5</td><td>Total gallons used per day (GPD)</td></tr> </table> | 7.0 | Average uses per day | 2.5 | Gallons per use | 17.5 | Total gallons used per day (GPD) | <p>USE #2 (If Necessary)</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td style="text-align: center;">0.0</td><td>Average uses per day</td></tr> <tr><td style="text-align: center;">0.0</td><td>Gallons per use</td></tr> <tr><td style="text-align: center;">0.0</td><td>Total gallons used per day (GPD)</td></tr> </table> | 0.0 | Average uses per day | 0.0 | Gallons per use | 0.0 | Total gallons used per day (GPD) |
| 7.0 | Average uses per day | | | | | | | | | | | | |
| 2.5 | Gallons per use | | | | | | | | | | | | |
| 17.5 | Total gallons used per day (GPD) | | | | | | | | | | | | |
| 0.0 | Average uses per day | | | | | | | | | | | | |
| 0.0 | Gallons per use | | | | | | | | | | | | |
| 0.0 | Total gallons used per day (GPD) | | | | | | | | | | | | |
| | <p>E) 17.5 GPD (Current)</p> | | | | | | | | | | | | |

2. Determine Gallons Per Day (GPD) water usage of NEW equipment:

| | | | | | | | | | | | | | |
|--|----------------------------------|----------------------|------------|-----------------|-------------|----------------------------------|--|------------|----------------------|------------|-----------------|------------|----------------------------------|
| <p>USE #1</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td style="text-align: center;">7.0</td><td>Average uses per day</td></tr> <tr><td style="text-align: center;">1.5</td><td>Gallons per use</td></tr> <tr><td style="text-align: center;">10.5</td><td>Total gallons used per day (GPD)</td></tr> </table> | 7.0 | Average uses per day | 1.5 | Gallons per use | 10.5 | Total gallons used per day (GPD) | <p>USE #2 (If Necessary)</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td style="text-align: center;">0.0</td><td>Average uses per day</td></tr> <tr><td style="text-align: center;">0.0</td><td>Gallons per use</td></tr> <tr><td style="text-align: center;">0.0</td><td>Total gallons used per day (GPD)</td></tr> </table> | 0.0 | Average uses per day | 0.0 | Gallons per use | 0.0 | Total gallons used per day (GPD) |
| 7.0 | Average uses per day | | | | | | | | | | | | |
| 1.5 | Gallons per use | | | | | | | | | | | | |
| 10.5 | Total gallons used per day (GPD) | | | | | | | | | | | | |
| 0.0 | Average uses per day | | | | | | | | | | | | |
| 0.0 | Gallons per use | | | | | | | | | | | | |
| 0.0 | Total gallons used per day (GPD) | | | | | | | | | | | | |
| | <p>F) 10.5 GPD (New)</p> | | | | | | | | | | | | |

3. Determine the water savings difference resulting from the project.

E) 17.5 GPD (current equipment) - **F) 10.5** GPD (new equipment) = **G) 7.00** GPD Water Savings

4. Convert gallons to hundred cubic feet (CCF) per year:

G) 7.0 GPD X **H) 260** Work Days / Year (260 Default) / **748** Gallons / CCF = **I) 2.43** CCF / Year Water Savings

5. Determine annual water bill cost savings:

I) 2.4 CCF X **A) \$4.00** Water Cost / CCF = **J) \$9.73** Water Bill Savings (1st Year)

6. Determine the annual sewer cost savings:

I) 2.4 CCF X **B) \$8.89** Sewer Cost / CCF = **K) \$21.63** Sewer Bill Savings (1st Year)

7. Use only for Hot Water Savings when Hot Water is made via Natural Gas or Electric Hot Water Heater

- a) Enter Corresponding Utility Rate
- b) Gallons of Water Saved per Year **[G x H]**
- c) % **HOT** Water Saved/ Yr; [(T Mixed - T Cold) / (T Hot - T Cold)]
- d) Gallons of Hot Water Saved per Year; [b] x c]
- e) Pounds per Gallon of Water
- f) Total Pounds of Water; [d] x c]
- g) Enter Delta T (Outgoing T - Incoming T)
- h) Total BTU's (Total Pounds of Water x Delta T); [f] x g]
- i) Enter Water Heater Efficiency Percentage
- j) BTU Input (Total BTU / Heater Efficiency); [h] / i]
- k) Therms (NG) [j] / 100,000]; kWh (Electric) Consumed [j] / 3,414]
- l) Total Utility Cost Savings (1st Year); [a] x k]

| | Natural Gas HW Heater (Per Therm) | Electric HW Heater (Per kWh) |
|-----------|---|------------------------------------|
| C) | | D) |
| | 1,820 | 1,820 |
| | 78.6% | 78.6% |
| | 1,431 | 1,431 |
| | 8.33 | 8.33 |
| | 15,161 | 15,161 |
| | 70 | 70 |
| | 1,061,242 | 1,061,242 |
| | 70% | 95% |
| | 742,869 | 1,008,180 |
| | 7.43 | 295 |
| L) | \$0.00 | M) \$0.00 |

Default 78.6% @ 105 Mixed; 120 Hot; 50 Cold

Default 70 (120 degrees - 50 degrees)

Default 70% for Natural Gas; 95% for Electric

100,000 BTU's / Therm; 3,413 BTU's / kWh

8. Use only for Hot Water Savings when Hot Water is made via steam to hot water heat exchanger and the steam is made by a Natural Gas or Electric Steam Boiler

- a) Enter Corresponding Utility Rate
- b) Gallons of Water Saved per Year - **[G x H]**
- c) % **HOT** Water Saved/ Yr; [(T Mixed - T Cold) / (T Hot - T Cold)]
- d) Gallons of Hot Water Saved per Year; [b] x c]
- e) Pounds per Gallon of Water
- f) Total Pounds of Water; [d] x c]
- g) Enter Delta T (Outgoing T - Incoming T)
- h) Total End-use Heat BTU's (Total Pounds of Water x Delta T); [f] x g]
- i) BTU's Released when 1 # of Steam Condenses
- j) Pounds of Steam Req'd (Total BTU's / BTU's per # of Steam); [h] x i]
- k) BTU's Required to make 1 Pound of Steam
- l) Total Steam BTU's required [j] x k]
- m) Enter Boiler Fuel to Steam Efficiency
- n) BTU Input (Total BTU / Heater Efficiency); [l] x m]
- o) Therms (NG) [j] / 100,000]; kWh (Electric) Consumed [j] / 3,414]
- p) Total Utility Cost Savings (1st Year); [a] x o]

| | Natural Gas Steam Boiler / Steam HW Heater (Per Gallon) | Electric Steam Boiler / Steam HW Heater (Per Gallon) |
|-----------|---|--|
| C) | | D) |
| | \$0.343 | |
| | 1,820 | 1,820 |
| | 78.6% | 78.6% |
| | 1,431 | 1,431 |
| | 8.33 | 8.33 |
| | 15,161 | 15,161 |
| | 70 | 70 |
| | 1,061,242 | 1,061,242 |
| | 970 | 970 |
| | 1,094 | 1,094 |
| | 1,150 | 1,150 |
| | 1,258,174 | 1,258,174 |
| | 80% | 100% |
| | 1,006,539 | 1,258,174 |
| | 10.07 | 369 |
| N) | \$3.45 | O) \$0.00 |

Default 78.6% @ 105 Mixed; 120 Hot; 50 Cold

Default 70 (120 degrees - 50 degrees)

Default 80% Natural Gas to Steam; 100% Electric to Steam

100,000 BTU's / Therm; 3,413 BTU's / kWh

9. Use only for when upgrading Natural Gas and Electrical efficiencies

- a) Enter Corresponding Utility Rate
- b) Current Therms (NG), kWh (Electric) consumed / day
- c) Estimated Therms (NG), Kwh (Electric) to be consumed / day
- d) Estimated Therms (NG), Kwh (Electric) savings / day; [b]- c]
- e) Total Utility Cost Savings (1st Year); [a] x d] x **H**

| Natural Gas (Per Therm) | | Electric (Per kWh) | |
|----------------------------|--------|-----------------------|--------|
| C) | | D) | |
| | | | |
| | | | |
| | 0 | | 0 |
| P) | \$0.00 | Q) | \$0.00 |

10. Enter Anticipated Annual Maintenance Savings:

R) \$0.00 30-Minute Service Call every 5 Years = 5 Minutes / Year

11. Enter Anticipated Utility Rate Increases

- a) Water
- b) Sewer
- c) Natural Gas
- d) Electrical
- e) Weighted Avg. of a) through d) [Used for **U**) and **W**) calculations]

| |
|-------|
| 0% |
| 0% |
| 0% |
| 0% |
| 0.00% |

12. Determine the Return on Investment **WITHOUT** rebate(s):

S) \$100 / **J)** \$9.73 =
 Installed Cost **K)** \$21.63 =
L) + N) + P) \$3.45 =
M) + O) + Q) \$0.00 =
R) \$0.00 =
T) \$34.82 =

| | | |
|-----------------------|------------------|--|
| 10.27 | Water Only | ROI (In Years) WITHOUT Rebate(s) |
| 4.62 | Sewer Only | |
| 28.97 | Natural Gas Only | |
| N/A | Electric Only | |
| N/A | Maintenance Only | |
| U) <u>2.87</u> | Total | |

WATER CONSERVATION ROI WORKSHEET

DATA ENTRY

A) **\$4.00** Water Cost / CCF
 B) **\$8.89** Sewer Cost / CCF

C) **\$0.343** Natural Gas Cost / Therm
 D) **\$0.048** Electrical Cost / kWh

Submission Title:

Activity 4: Industrial Dishwasher Replacement

1. Determine Gallons Per Day (GPD) water usage of current equipment to be retrofitted/replaced.

USE #1
0.0 Average uses per day
0.0 Gallons per use
0.0 Total gallons used per day (GPD)

USE #2 (If Necessary)
0.0 Average uses per day
0.0 Gallons per use
0.0 Total gallons used per day (GPD)

E) **0.0** GPD (Current)

2. Determine Gallons Per Day (GPD) water usage of NEW equipment:

USE #1
0.0 Average uses per day
0.0 Gallons per use
0.0 Total gallons used per day (GPD)

USE #2 (If Necessary)
0.0 Average uses per day
0.0 Gallons per use
0.0 Total gallons used per day (GPD)

F) **0.0** GPD (New)

3. Determine the water savings difference resulting from the project.

E) **0.0** GPD (current equipment) - F) **0.0** GPD (new equipment) =

G) **1,000.00** GPD Water Savings

4. Convert gallons to hundred cubic feet (CCF) per year:

G) **1,000.0** GPD X H) **365** Work Days / Year (260 Default) / 748 Gallons / CCF =

I) **487.97** CCF / Year Water Savings

5. Determine annual water bill cost savings:

I) **488.0** CCF X A) **\$4.00** Water Cost / CCF = J) **\$1,951.87** Water Bill Savings (1st Year)

6. Determine the annual sewer cost savings:

I) **488.0** CCF X B) **\$8.89** Sewer Cost / CCF = K) **\$4,338.03** Sewer Bill Savings (1st Year)

7. Use only for Hot Water Savings when Hot Water is made via Natural Gas or Electric Hot Water Heater

- a) Enter Corresponding Utility Rate
- b) Gallons of Water Saved per Year **[G x H]**
- c) % **HOT** Water Saved/ Yr; [(T Mixed - T Cold) / (T Hot - T Cold)]
- d) Gallons of Hot Water Saved per Year; [b x c]
- e) Pounds per Gallon of Water
- f) Total Pounds of Water; [d x e]
- g) Enter Delta T (Outgoing T - Incoming T)
- h) Total BTU's (Total Pounds of Water x Delta T); [f x g]
- i) Enter Water Heater Efficiency Percentage
- j) BTU Input (Total BTU / Heater Efficiency); [h] / i]
- k) Therms (NG) [j] / 100,000]; kWh (Electric) Consumed [j] / 3,414]
- l) Total Utility Cost Savings (1st Year); [a x k]

| | Natural Gas HW Heater (Per Therm) | Electric HW Heater (Per kWh) |
|-----------|---|------------------------------------|
| C) | | D) |
| | 365,000 | 365,000 |
| | 78.6% | 78.6% |
| | 286,890 | 286,890 |
| | 8.33 | 8.33 |
| | 3,040,450 | 3,040,450 |
| | 70 | 70 |
| | 212,831,500 | 212,831,500 |
| | 70% | 95% |
| | 148,982,050 | 202,189,925 |
| | 1489.82 | 59,241 |
| L) | \$0.00 | M) \$0.00 |

Default 78.6% @ 105 Mixed; 120 Hot; 50 Cold
 Default 70 (120 degrees - 50 degrees)
 Default 70% for Natural Gas; 95% for Electric
 100,000 BTU's / Therm; 3,413 BTU's / kWh

8. Use only for Hot Water Savings when Hot Water is made via steam to hot water heat exchanger and the steam is made by a Natural Gas or Electric Steam Boiler

- a) Enter Corresponding Utility Rate
- b) Gallons of Water Saved per Year - **[G x H]**
- c) % **HOT** Water Saved/ Yr; [(T Mixed - T Cold) / (T Hot - T Cold)]
- d) Gallons of Hot Water Saved per Year; [b x c]
- e) Pounds per Gallon of Water
- f) Total Pounds of Water; [d x e]
- g) Enter Delta T (Outgoing T - Incoming T)
- h) Total End-use Heat BTU's (Total Pounds of Water x Delta T); [f x g]
- i) BTU's Released when 1 # of Steam Condenses
- j) Pounds of Steam Req'd (Total BTU's / BTU's per # of Steam); [h] x i]
- k) BTU's Required to make 1 Pound of Steam
- l) Total Steam BTU's required [j] x k]
- m) Enter Boiler Fuel to Steam Efficiency
- n) BTU Input (Total BTU / Heater Efficiency); [l] x m]
- o) Therms (NG) [j] / 100,000]; kWh (Electric) Consumed [j] / 3,414]
- p) Total Utility Cost Savings (1st Year); [a x o]

| | Natural Gas Steam Boiler / Steam HW Heater (Per Gallon) | Electric Steam Boiler / Steam HW Heater (Per Gallon) |
|-----------|---|--|
| C) | | D) |
| | 365,000 | 365,000 |
| | 78.6% | 78.6% |
| | 286,890 | 286,890 |
| | 8.33 | 8.33 |
| | 3,040,450 | 3,040,450 |
| | 70 | 70 |
| | 212,831,500 | 212,831,500 |
| | 970 | 970 |
| | 219,414 | 219,414 |
| | 1,150 | 1,150 |
| | 252,326,005 | 252,326,005 |
| | 80% | 100% |
| | 201,860,804 | 252,326,005 |
| | 2,018.61 | 73,931 |
| N) | \$0.00 | O) \$0.00 |

Default 78.6% @ 105 Mixed; 120 Hot; 50 Cold
 Default 70 (120 degrees - 50 degrees)
 Default 80% Natural Gas to Steam; 100% Electric to Steam
 100,000 BTU's / Therm; 3,413 BTU's / kWh

9. Use only for when upgrading Natural Gas and Electrical efficiencies

- a) Enter Corresponding Utility Rate
- b) Current Therms (NG), kWh (Electric) consumed / day
- c) Estimated Therms (NG), Kwh (Electric) to be consumed / day
- d) Estimated Therms (NG), Kwh (Electric) savings / day; [b]- c]
- e) Total Utility Cost Savings (1st Year); [a x d] x H

| Natural Gas (Per Therm) | | Electric (Per kWh) | |
|----------------------------|----------|-----------------------|------------|
| C) | \$0.343 | D) | \$0.048 |
| | | | |
| | | | |
| | 7 | | 127 |
| P) | \$876.37 | Q) | \$2,225.04 |

10. Enter Anticipated Annual Maintenance Savings:

R) \$0.00 30-Minute Service Call every 5 Years = 5 Minutes / Year

11. Enter Anticipated Utility Rate Increases

- a) Water
- b) Sewer
- c) Natural Gas
- d) Electrical
- e) Weighted Avg. of a) through d) [Used for U) and W) calculations]

| |
|-------|
| 0% |
| 0% |
| 0% |
| 0% |
| 0.00% |

12. Determine the Return on Investment WITHOUT rebate(s):

S) \$50,000 / J) \$1,951.87 =
 Installed Cost K) \$4,338.03 =
 L) + N) + P) \$876.37 =
 M) + O) + Q) \$2,225.04 =
 R) \$0.00 =
 T) \$9,391.31 =

| | | |
|---------|------------------|--|
| 25.62 | Water Only | ROI (In Years) <u>WITHOUT</u> Rebate(s) |
| 11.53 | Sewer Only | |
| 57.05 | Natural Gas Only | |
| 22.47 | Electric Only | |
| N/A | Maintenance Only | |
| U) 5.32 | Total | |

WATER CONSERVATION ROI WORKSHEET

DATA ENTRY

A) **\$4.00** Water Cost / CCF
 B) **\$8.89** Sewer Cost / CCF

C) **\$0.343** Natural Gas Cost / Therm
 D) **\$0.048** Electrical Cost / kWh

Submission Title:

Activity 5: Industrial Dishwasher Replacement

1. Determine Gallons Per Day (GPD) water usage of current equipment to be retrofitted/replaced.

USE #1
0.0 Average uses per day
0.0 Gallons per use
0.0 Total gallons used per day (GPD)

USE #2 (If Necessary)
0.0 Average uses per day
0.0 Gallons per use
0.0 Total gallons used per day (GPD)

E) **0.0** GPD (Current)

2. Determine Gallons Per Day (GPD) water usage of NEW equipment:

USE #1
0.0 Average uses per day
0.0 Gallons per use
0.0 Total gallons used per day (GPD)

USE #2 (If Necessary)
0.0 Average uses per day
0.0 Gallons per use
0.0 Total gallons used per day (GPD)

F) **0.0** GPD (New)

3. Determine the water savings difference resulting from the project.

E) **0.0** GPD (current equipment) - F) **0.0** GPD (new equipment) =

G) **1,000.00** GPD Water Savings

4. Convert gallons to hundred cubic feet (CCF) per year:

G) **1,000.0** GPD X H) **365** Work Days / Year (260 Default) / 748 Gallons / CCF =

I) **487.97** CCF / Year Water Savings

5. Determine annual water bill cost savings:

I) **488.0** CCF X A) **\$4.00** Water Cost / CCF = J) **\$1,951.87** Water Bill Savings (1st Year)

6. Determine the annual sewer cost savings:

I) **488.0** CCF X B) **\$8.89** Sewer Cost / CCF = K) **\$4,338.03** Sewer Bill Savings (1st Year)

7. Use only for Hot Water Savings when Hot Water is made via Natural Gas or Electric Hot Water Heater

- a) Enter Corresponding Utility Rate
- b) Gallons of Water Saved per Year **[G x H]**
- c) % **HOT** Water Saved/ Yr; [(T Mixed - T Cold) / (T Hot - T Cold)]
- d) Gallons of Hot Water Saved per Year; [b] x c]
- e) Pounds per Gallon of Water
- f) Total Pounds of Water; [d] x e]
- g) Enter Delta T (Outgoing T - Incoming T)
- h) Total BTU's (Total Pounds of Water x Delta T); [f] x g]
- i) Enter Water Heater Efficiency Percentage
- j) BTU Input (Total BTU / Heater Efficiency); [h] / i]
- k) Therms (NG) [j] / 100,000]; kWh (Electric) Consumed [j] / 3,414]
- l) Total Utility Cost Savings (1st Year); [a] x k]

| | Natural Gas HW Heater (Per Therm) | Electric HW Heater (Per kWh) | |
|----|-----------------------------------|------------------------------|---|
| C) | | D) | |
| | 365,000 | 365,000 | |
| | 78.6% | 78.6% | Default 78.6% @ 105 Mixed; 120 Hot; 50 Cold |
| | 286,890 | 286,890 | |
| | 8.33 | 8.33 | |
| | 3,040,450 | 3,040,450 | |
| | 70 | 70 | Default 70 (120 degrees - 50 degrees) |
| | 212,831,500 | 212,831,500 | |
| | 70% | 95% | Default 70% for Natural Gas; 95% for Electric |
| | 148,982,050 | 202,189,925 | |
| | 1489.82 | 59,241 | 100,000 BTU's / Therm; 3,413 BTU's / kWh |
| L) | \$0.00 | M) | \$0.00 |

8. Use only for Hot Water Savings when Hot Water is made via steam to hot water heat exchanger and the steam is made by a Natural Gas or Electric Steam Boiler

- a) Enter Corresponding Utility Rate
- b) Gallons of Water Saved per Year - **[G x H]**
- c) % **HOT** Water Saved/ Yr; [(T Mixed - T Cold) / (T Hot - T Cold)]
- d) Gallons of Hot Water Saved per Year; [b] x c]
- e) Pounds per Gallon of Water
- f) Total Pounds of Water; [d] x e]
- g) Enter Delta T (Outgoing T - Incoming T)
- h) Total End-use Heat BTU's (Total Pounds of Water x Delta T); [f] x g]
- i) BTU's Released when 1 # of Steam Condenses
- j) Pounds of Steam Req'd (Total BTU's / BTU's per # of Steam); [h] x i]
- k) BTU's Required to make 1 Pound of Steam
- l) Total Steam BTU's required [j] x k]
- m) Enter Boiler Fuel to Steam Efficiency
- n) BTU Input (Total BTU / Heater Efficiency); [l] x m]
- o) Therms (NG) [j] / 100,000]; kWh (Electric) Consumed [j] / 3,414]
- p) Total Utility Cost Savings (1st Year); [a] x o]

| | Natural Gas Steam Boiler / Steam HW Heater (Per Gallon) | Electric Steam Boiler / Steam HW Heater (Per Gallon) | |
|----|---|--|--|
| C) | | D) | |
| | 365,000 | 365,000 | |
| | 78.6% | 78.6% | Default 78.6% @ 105 Mixed; 120 Hot; 50 Cold |
| | 286,890 | 286,890 | |
| | 8.33 | 8.33 | |
| | 3,040,450 | 3,040,450 | |
| | 70 | 70 | Default 70 (120 degrees - 50 degrees) |
| | 212,831,500 | 212,831,500 | |
| | 970 | 970 | |
| | 219,414 | 219,414 | |
| | 1,150 | 1,150 | |
| | 252,326,005 | 252,326,005 | Default 80% Natural Gas to Steam; 100% Electric to Steam |
| | 80% | 100% | |
| | 201,860,804 | 252,326,005 | |
| | 2,018.61 | 73,931 | 100,000 BTU's / Therm; 3,413 BTU's / kWh |
| N) | \$0.00 | O) | \$0.00 |

9. Use only for when upgrading Natural Gas and Electrical efficiencies

- a) Enter Corresponding Utility Rate
- b) Current Therms (NG), kWh (Electric) consumed / day
- c) Estimated Therms (NG), Kwh (Electric) to be consumed / day
- d) Estimated Therms (NG), Kwh (Electric) savings / day; [b]- c]
- e) Total Utility Cost Savings (1st Year); [a] x d] x H)

| Natural Gas (Per Therm) | | Electric (Per kWh) | |
|----------------------------|---------|-----------------------|---------|
| C) | \$0.343 | D) | \$0.048 |
| | | | |
| | | | |
| | 0 | | 0 |
| P) | \$0.00 | Q) | \$0.00 |

10. Enter Anticipated Annual Maintenance Savings:

R) **\$1,000.00** 30-Minute Service Call every 5 Years = 5 Minutes / Year

11. Enter Anticipated Utility Rate Increases

- a) Water
- b) Sewer
- c) Natural Gas
- d) Electrical
- e) Weighted Avg. of a) through d) [Used for U) and W) calculations]

| |
|-------|
| 5% |
| 8% |
| 2% |
| 2% |
| 7.07% |

12. Determine the Return on Investment **WITHOUT** rebate(s):

S) **\$50,000** / J) **\$1,951.87** =
 Installed Cost = K) **\$4,338.03** =
 L) + N) + P) **\$0.00** =
 M) + O) + Q) **\$0.00** =
 R) **\$1,000.00** =
 T) **\$7,289.91** =

| | | |
|---------|------------------|--|
| 16.94 | Water Only | ROI (In Years) WITHOUT Rebate(s) |
| 8.52 | Sewer Only | |
| N/A | Natural Gas Only | |
| N/A | Electric Only | |
| 50.00 | Maintenance Only | |
| U) 6.00 | Total | |

13. Enter Water Utility Rebate:

S) **\$50,000.00** X **10%** = **\$5,000.00**
 Installed Cost Rebate Amount Percentage Estimated Water Utility Rebate Amount

14. Enter Sewer Utility Rebate:

S) **\$50,000.00** X **0%** = **\$0.00**
 Installed Cost Rebate Amount Percentage Estimated Sewer Utility Rebate Amount

15. Enter Natural Gas Utility Rebate:

S) **\$50,000.00** X **0%** = **\$0.00**
 Installed Cost Rebate Amount Percentage Estimated Natural Gas Utility Rebate Amount

16. Enter Electrical Utility Rebate:

S) \$50,000.00 X 70% = \$35,000.00
 Installed Cost Rebate Amount Percentage Estimated Electrical Utility Rebate Amount

17. Calculate Total Installed Costs after Rebates

S) \$50,000.00 - \$40,000.00 = V) \$10,000.00
 Installed Cost Total Rebate(s) Installed Cost with Rebate(s)

18. Determine the Return on Investment **WITH** Rebate(s):

V) \$10,000.00 / J) \$1,951.87 =
 Installed Cost with Rebate(s) K) \$4,338.03 =
 L) + N) + P) \$0.00 =
 M) + O) + Q) \$0.00 =
 R) \$1,000.00 =
 S) \$7,289.91 =

| | | |
|-------|------------------|---|
| 4.70 | Water Only | ROI (In Years) WITH Rebate(s) |
| 2.21 | Sewer Only | |
| N/A | Natural Gas Only | |
| N/A | Electric Only | |
| 10.00 | Maintenance Only | |
| 1.43 | Total | |

W)