

# Town of Danvers Cost of Service Study Results

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# Discussion

- Review Electric Department
  - Financial Projections & Targets
    - Debt Coverage Ratio
    - Minimum Cash
    - Target Operating Income
- Review Cost of Service Results
  - Cost to service each class of customers
  - Monthly Customer Charges

# Assumptions

- Annual Inflation 2.2%
- Power Supply Change:
  - 2020 – 3.9%
  - 2021 – 1.4%
  - 2022 – 1.3%
  - 2023 – 1.7%
  - 2024 – 4.2%
- Usage Change
  - 2021 – (0.3%)
  - 2022 – 0.0%
  - 2023 – 0.0%
  - 2024 – 0.3%
- Capital Improvements Plan
  - 2020 - \$4.5M
  - 2021 – \$6.25M
  - 2022 - \$3.8M
  - 2023 - \$3.65M
  - 2024 - \$2M

# Projection without Rate Change

| Fiscal Year | Projected Rate Adjustments | Debt Coverage Ratio | Projected Expenses | Projected Revenues | Adjusted Operating Income | Target Operating Income | Projected Cash Balances | Recommended Minimum Cash |
|-------------|----------------------------|---------------------|--------------------|--------------------|---------------------------|-------------------------|-------------------------|--------------------------|
| 2021        | 0.0%                       | 3.05                | \$40,184,501       | \$39,446,564       | \$ (737,937)              | \$ 2,978,622            | \$ 9,195,064            | \$ 12,553,291            |
| 2022        | 0.0%                       | 2.56                | 41,000,555         | 39,777,953         | \$ (1,222,602)            | 3,116,755               | \$ 6,467,500            | 12,726,237               |
| 2023        | 0.0%                       | 2.00                | 41,995,683         | 40,208,877         | \$ (1,786,806)            | 3,251,395               | \$ 3,486,094            | 12,884,367               |
| 2024        | 0.0%                       | 1.85                | 43,574,652         | 41,495,807         | \$ (2,078,845)            | 3,331,462               | \$ 1,961,941            | 13,089,248               |
| 2025        | 0.0%                       | 1.67                | 44,776,496         | 42,348,704         | \$ (2,427,793)            | 3,476,267               | \$ (1,712,142)          | 13,315,613               |

| Fiscal Year | Projected Rate Adjustments | Debt Coverage Ratio | Proj Distribution Expenses | Revenues net of Power Supply | Adjusted Operating Income | Target Operating Income | Projected Cash Balances | Recommended Minimum Cash |
|-------------|----------------------------|---------------------|----------------------------|------------------------------|---------------------------|-------------------------|-------------------------|--------------------------|
| 2021        | 0.00%                      | 3.05                | 13,767,433                 | 13,029,497                   | \$ (737,937)              | \$ 2,978,622            | \$ 9,195,064            | \$ 12,553,291            |
| 2022        | 0.00%                      | 2.56                | 14,249,123                 | 13,026,522                   | \$ (1,222,602)            | 3,116,755               | \$ 6,467,500            | 12,726,237               |
| 2023        | 0.00%                      | 2.00                | 14,808,465                 | 13,021,659                   | \$ (1,786,806)            | 3,251,395               | \$ 3,486,094            | 12,884,367               |
| 2024        | 0.00%                      | 1.85                | 15,144,762                 | 13,065,917                   | \$ (2,078,845)            | 3,331,462               | \$ 1,961,941            | 13,089,248               |
| 2025        | 0.00%                      | 1.67                | 15,493,710                 | 13,065,917                   | \$ (2,427,793)            | 3,476,267               | \$ (1,712,142)          | 13,315,613               |

# Debt Coverage Ratio (Current Rates)

| Description                                      | Projected 2021 | Projected 2022 | Projected 2023 | Projected 2024 | Projected 2025 |
|--|----------------|----------------|----------------|----------------|----------------|
| <b>Debt Coverage Ratio</b>                       |                |                |                |                |                |
| Net Income                                       | \$ (813,933)   | \$ (1,301,573) | \$ (1,859,515) | \$ (2,146,260) | \$ (2,483,279) |
| Add Depreciation/Amortization Expense            | 2,867,908      | 2,944,008      | 3,093,108      | 3,207,108      | 3,328,902      |
| Add Interest Expense                             | 145,753        | 124,946        | 105,046        | 84,846         | 65,296         |
| Cash Generated from Operations                   | \$ 2,199,727   | \$ 1,767,382   | \$ 1,338,640   | \$ 1,145,694   | \$ 910,919     |
| Debt Principal and Interest                      | \$ 720,753     | \$ 689,946     | \$ 670,046     | \$ 619,846     | \$ 545,296     |
| <b>Projected Debt Coverage Ratio (Covenants)</b> | <b>3.05</b>    | <b>2.56</b>    | <b>2.00</b>    | <b>1.85</b>    | <b>1.67</b>    |
| <b>Minimum Debt Coverage Ratio</b>               | <b>1.4</b>     | <b>1.4</b>     | <b>1.4</b>     | <b>1.4</b>     | <b>1.4</b>     |

# Minimum Cash Recommendation

| Description   | Projected 2021       | Projected 2022       | Projected 2023       | Projected 2024       | Projected 2025        |
|---|----------------------|----------------------|----------------------|----------------------|-----------------------|
| <b>Minimum Cash Reserve Allocation</b>                |                      |                      |                      |                      |                       |
| Operation & Maintenance Less Depreciation Expense     | 12.3%                | 12.3%                | 12.3%                | 12.3%                | 12.3%                 |
| Purchase Power Expense                                | 14.2%                | 14.2%                | 14.2%                | 14.2%                | 14.2%                 |
| Historical Rate Base                                  | 3%                   | 3%                   | 3%                   | 3%                   | 3%                    |
| Current Portion of Debt Service Payment               | 83%                  | 83%                  | 83%                  | 83%                  | 83%                   |
| Five Year Capital Improvements - Net of bond proceeds | 20%                  | 20%                  | 20%                  | 20%                  | 20%                   |
| % Plant Depreciated                                   | 61%                  | 61%                  | 62%                  | 64%                  | 65%                   |
| <b>Calculated Minimum Cash Level</b>                  |                      |                      |                      |                      |                       |
| Operation & Maintenance Less Depreciation Expense     | \$ 1,278,400         | \$ 1,306,333         | \$ 1,334,876         | \$ 1,364,043         | \$ 1,393,848          |
| Purchase Power Expense                                | 3,743,383            | 3,790,763            | 3,852,516            | 4,028,606            | 4,149,464             |
| Historical Rate Base                                  | 3,002,892            | 3,117,042            | 3,226,542            | 3,288,042            | 3,409,233             |
| Current Portion of Debt Service Reserve               | 572,655              | 556,138              | 514,472              | 452,596              | 407,107               |
| Five Year Capital Improvements - Net of bond proceeds | 3,955,961            | 3,955,961            | 3,955,961            | 3,955,961            | 3,955,961             |
| <b>Minimum Cash Reserve Levels</b>                    | <b>\$ 12,553,291</b> | <b>\$ 12,726,237</b> | <b>\$ 12,884,367</b> | <b>\$ 13,089,248</b> | <b>\$ 13,315,613</b>  |
| <b>Projected Cash Reserves</b>                        | <b>\$ 9,195,064</b>  | <b>\$ 6,467,500</b>  | <b>\$ 3,486,094</b>  | <b>\$ 1,961,941</b>  | <b>\$ (1,712,142)</b> |
| Days Working Capital based on Minimum Cash Recommer   | 125                  | 124                  | 124                  | 121                  | 120                   |
| Days Working Capital based on Cash Projection         | 91                   | 63                   | 33                   | 18                   | (15)                  |

# Target Operating Income

| Description                                 | Projected 2021      | Projected 2022        | Projected 2023        | Projected 2024        | Projected 2025        |
|---|---------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| <b>Target Operating Income Determinants</b> |                     |                       |                       |                       |                       |
| Net Book Value/Working Capital              | \$ 39,356,153       | \$ 40,217,145         | \$ 40,774,037         | \$ 39,616,929         | \$ 40,327,733         |
| Outstanding Principal on Debt               | 3,426,000           | 2,861,000             | 2,296,000             | 1,761,000             | 1,281,000             |
| System Equity                               | \$ 35,930,153       | \$ 37,356,145         | \$ 38,478,037         | \$ 37,855,929         | \$ 39,046,733         |
| Debt:Equity Ratio                           | 9%                  | 7%                    | 6%                    | 4%                    | 3%                    |
| <b>Target Operating Income Allocation</b>   |                     |                       |                       |                       |                       |
| Interest on Debt                            | 4.25%               | 4.37%                 | 4.58%                 | 4.82%                 | 5.10%                 |
| System Equity                               | 7.88%               | 8.01%                 | 8.18%                 | 8.58%                 | 8.74%                 |
| <b>Target Operating Income</b>              |                     |                       |                       |                       |                       |
| Interest on Debt                            | \$ 145,753          | \$ 124,946            | \$ 105,046            | \$ 84,846             | \$ 65,296             |
| System Equity                               | \$ 2,832,869        | \$ 2,991,809          | \$ 3,146,349          | \$ 3,246,615          | \$ 3,410,971          |
| <b>Target Operating Income</b>              | <b>\$ 2,978,622</b> | <b>\$ 3,116,755</b>   | <b>\$ 3,251,395</b>   | <b>\$ 3,331,462</b>   | <b>\$ 3,476,267</b>   |
| <b>Projected Operating Income</b>           | <b>\$ (737,937)</b> | <b>\$ (1,222,602)</b> | <b>\$ (1,786,806)</b> | <b>\$ (2,078,845)</b> | <b>\$ (2,427,793)</b> |
| <b>Rate of Return in %</b>                  | <b>7.6%</b>         | <b>7.7%</b>           | <b>8.0%</b>           | <b>8.4%</b>           | <b>8.6%</b>           |

# Sample Rate Tracks

| Fiscal Year | Projected Rate Adjustments | Debt Coverage Ratio | Projected Expenses | Projected Revenues | Adjusted Operating Income | Target Operating Income | Projected Cash Balances | Recommended Minimum Cash |
|-------------|----------------------------|---------------------|--------------------|--------------------|---------------------------|-------------------------|-------------------------|--------------------------|
| 2021        | 4.9%                       | 5.73                | \$40,184,501       | \$41,379,445       | \$ 1,194,945              | \$ 2,978,622            | \$ 11,127,946           | \$ 12,553,291            |
| 2022        | 2.0%                       | 6.58                | 41,000,555         | 42,537,809         | \$ 1,537,255              | 3,116,755               | \$ 11,169,902           | 12,726,237               |
| 2023        | 2.0%                       | 7.41                | 41,995,683         | 43,811,320         | \$ 1,815,637              | 3,251,395               | \$ 11,814,451           | 12,884,367               |
| 2024        | 2.0%                       | 9.14                | 43,574,652         | 45,973,924         | \$ 2,399,273              | 3,331,462               | \$ 14,810,058           | 13,089,248               |
| 2025        | 2.0%                       | 11.62               | 44,776,496         | 47,707,520         | \$ 2,931,023              | 3,476,267               | \$ 16,559,031           | 13,315,613               |

| Fiscal Year | Projected Rate Adjustments | Debt Coverage Ratio | Projected Expenses | Projected Revenues | Adjusted Operating Income | Target Operating Income | Projected Cash Balances | Recommended Minimum Cash |
|-------------|----------------------------|---------------------|--------------------|--------------------|---------------------------|-------------------------|-------------------------|--------------------------|
| 2021        | 2.75%                      | 4.56                | \$40,184,501       | \$40,531,344       | \$ 346,844                | \$ 2,978,622            | \$ 10,279,845           | \$ 12,553,291            |
| 2022        | 2.75%                      | 5.76                | 41,000,555         | 41,976,856         | \$ 976,301                | 3,116,755               | \$ 9,756,608            | 12,726,237               |
| 2023        | 2.75%                      | 7.01                | 41,995,683         | 43,551,522         | \$ 1,555,838              | 3,251,395               | \$ 10,134,291           | 12,884,367               |
| 2024        | 2.75%                      | 9.22                | 43,574,652         | 46,029,860         | \$ 2,455,209              | 3,331,462               | \$ 13,177,433           | 13,089,248               |
| 2025        | 2.75%                      | 12.31               | 44,776,496         | 48,095,256         | \$ 3,318,760              | 3,476,267               | \$ 15,305,979           | 13,315,613               |



# Electric Cost of Service Results

| Customer Class                                  | Projected            |                      |             |
|---|----------------------|----------------------|-------------|
|   | Cost of Service      | Rate Revenue         | % Change    |
| Residential Rate R-1                            | \$ 15,614,474        | \$ 13,392,653        | 16.6%       |
| Residential Rate R-1 (Farm)                     | 1,490                | 1,164                | 28.0%       |
| Small General Service Rate G-1                  | 4,440,561            | 3,759,560            | 18.1%       |
| Small General Service Rate G-1 (Farm)           | 19,312               | 13,979               | 38.2%       |
| Municipal General Service Rate MG-1             | 321,968              | 271,567              | 18.6%       |
| Vacant  | 88,131               | -                    | 0.0%        |
| Private Area Lighting                           | 305,010              | 169,961              | 79.5%       |
| Municipal Street Lighting                       | 905,682              | 114,715              | 689.5%      |
| Large General Service Demand Rate G-3           | 5,068,400            | 5,438,644            | -6.8%       |
| Large General Service Demand Rate G-3 (Farm)    | -                    | -                    | 0.0%        |
| Large General Service Demand Rate G-2           | 14,533,221           | 14,284,213           | 1.7%        |
| Large General Service Demand Rate G-2 (Farm)    | 74,386               | 76,368               | -2.6%       |
| Municipal General Service Rate MG-2             | 730,180              | 819,069              | -10.9%      |
| Large General Service Demand Rate G-2 Primary   | 769,385              | 785,526              | -2.1%       |
| Large General Service Demand Rate G-2 Sub Trans | 8,784                | 9,637                | -8.8%       |
| Large General Service Demand Rate G-3 Primary   | 282,140              | 309,509              | -8.8%       |
| <b>Total</b>                                    | <b>\$ 43,163,122</b> | <b>\$ 39,446,564</b> | <b>9.4%</b> |

# Monthly Charge

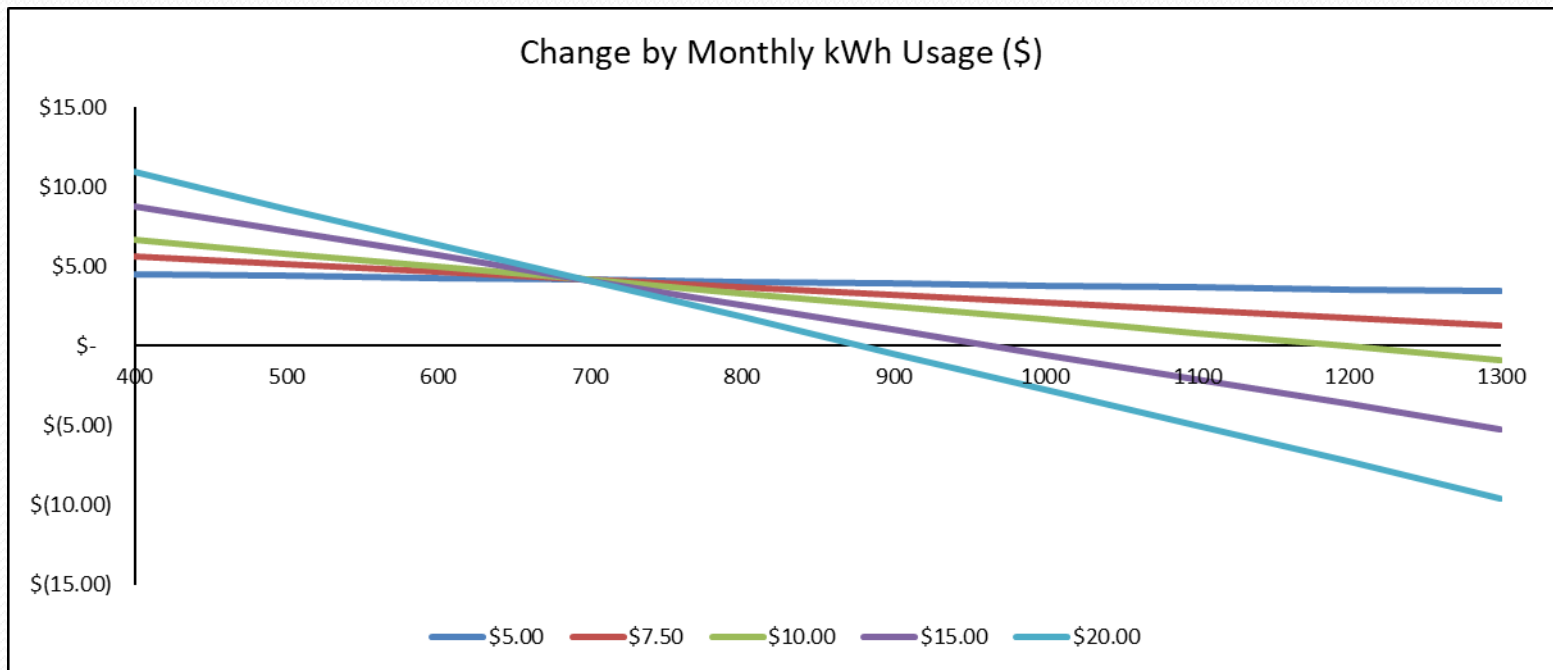
| Customer Class                                  | COS<br>Customer<br>Charge | Current<br>Average<br>Customer<br>Charge |
|---|---------------------------|--|
| Residential Rate R-1                            | \$ 23.22                  | \$ -                                     |
| Residential Rate R-1 (Farm)                     | 23.27                     | -  |
| Small General Service Rate G-1                  | 34.27                     | 5.00                                     |
| Small General Service Rate G-1 (Farm)           | 34.67                     | 4.50                                     |
| Municipal General Service Rate MG-1             | 34.25                     | 5.00                                     |
| Vacant  | 4.18                      | -  |
| Private Area Lighting                           | 2.18                      | -  |
| Municipal Street Lighting                       | 37.15                     | -  |
| Large General Service Demand Rate G-3           | 634.42                    | 210.00                                   |
| Large General Service Demand Rate G-3 (Farm)    | -                         | -  |
| Large General Service Demand Rate G-2           | 126.91                    | 10.00                                    |
| Large General Service Demand Rate G-2 (Farm)    | 120.26                    | 10.00                                    |
| Municipal General Service Rate MG-2             | 130.00                    | 10.00                                    |
| Large General Service Demand Rate G-2 Primary   | 111.05                    | 10.00                                    |
| Large General Service Demand Rate G-2 Sub Trans | 111.05                    | 10.00                                    |
| Large General Service Demand Rate G-3 Primary   | 521.37                    | 210.00                                   |

# Sample Residential Rate

| Rates                             | Current \$0.00<br>Monthly<br>Charge | Year 1 \$5.00<br>Monthly<br>Charge | Year 1 \$7.50<br>Monthly<br>Charge | Year 1 \$10.00<br>Monthly<br>Charge | Year 1 \$15.00<br>Monthly<br>Charge | Year 1 \$20.00<br>Monthly<br>Charge |
|-----------------------------------|-------------------------------------|------------------------------------|------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|
| <b>Monthly Facilities Charge:</b> |                                     |                                    |                                    |                                     |                                     |                                     |
| Minimum Bill                      | \$ 5.00                             | \$ -                               | \$ -                               | \$ -                                | \$ -                                | \$ -                                |
| Customer Charge                   | \$ -                                | \$ 5.00                            | \$ 7.50                            | \$ 10.00                            | \$ 15.00                            | \$ 20.00                            |
| <b>Energy Charge:</b>             |                                     |                                    |                                    |                                     |                                     |                                     |
| Embedded Power Supply             | \$ 0.02450                          | \$ 0.08920                         | \$ 0.08920                         | \$ 0.08920                          | \$ 0.08920                          | \$ 0.08920                          |
| Embedded O&M                      | \$ 0.06950                          | \$ 0.06028                         | \$ 0.06295                         | \$ 0.06587                          | \$ 0.06545                          | \$ 0.06531                          |
| PPFA                              | \$ 0.05669                          | \$ -                               | \$ -                               | \$ -                                | \$ -                                | \$ -                                |
| All Energy                        | \$ 0.15069                          | \$ 0.14947                         | \$ 0.15214                         | \$ 0.15506                          | \$ 0.15465                          | \$ 0.15451                          |
| <b>Other:</b>                     |                                     |                                    |                                    |                                     |                                     |                                     |
| Early Payment Discount            | \$ (677,178)                        | \$ (704,021)                       | \$ (732,182)                       | \$ (761,469)                        | \$ (791,928)                        | \$ (823,605)                        |
| Revenue from Rate                 | \$ 13,392,653                       | \$ 13,923,532                      | \$ 14,480,474                      | \$ 15,059,693                       | \$ 15,662,080                       | \$ 16,288,564                       |
| Change from Previous              |                                     | 4.0%                               | 4.0%                               | 4.0%                                | 4.0%                                | 4.0%                                |

+/- 2% Residentials would likely see additional 1.25% above average (2.75%).  
 Due to large size of class would not get to 2% without greater reductions from  
 average than 2% in other classes.

# Sample Residential Rate



# Sample Residential Rate

| All Energy | Monthly \$ Change by Energy Usage |         |           |           |           |
|------------|-----------------------------------|---------|-----------|-----------|-----------|
|            | \$5.00                            | \$7.50  | \$10.00   | \$15.00   | \$20.00   |
| 400        | \$ 4.51                           | \$ 5.60 | \$ 6.66   | \$ 8.78   | \$ 10.90  |
| 500        | \$ 4.39                           | \$ 5.12 | \$ 5.82   | \$ 7.23   | \$ 8.63   |
| 600        | \$ 4.27                           | \$ 4.64 | \$ 4.99   | \$ 5.67   | \$ 6.36   |
| 700        | \$ 4.15                           | \$ 4.17 | \$ 4.15   | \$ 4.12   | \$ 4.08   |
| 800        | \$ 4.02                           | \$ 3.69 | \$ 3.31   | \$ 2.56   | \$ 1.81   |
| 900        | \$ 3.90                           | \$ 3.22 | \$ 2.48   | \$ 1.01   | \$ (0.47) |
| 1000       | \$ 3.78                           | \$ 2.74 | \$ 1.64   | \$ (0.55) | \$ (2.74) |
| 1100       | \$ 3.66                           | \$ 2.26 | \$ 0.81   | \$ (2.10) | \$ (5.01) |
| 1200       | \$ 3.54                           | \$ 1.79 | \$ (0.03) | \$ (3.66) | \$ (7.29) |
| 1300       | \$ 3.42                           | \$ 1.31 | \$ (0.86) | \$ (5.21) | \$ (9.56) |

# Questions

