

# Natural Gas Consumption

| Two Greenhouse Modine Heaters (90,000 BTUs each) |                  |                              |                   |                                  |                 | Water Heater System (single heat coil) |                                 |                   |                 | Total<br>Therms in<br>Farm<br><br>Combined<br>therms<br>modines<br>and water<br>heater | GrowHaus Natural Gas<br>Consumption |                                     |                      | Farm<br>Cost for<br>Gas |
|--|------------------|------------------------------|-------------------|----------------------------------|-----------------|--|---------------------------------|-------------------|-----------------|--|-------------------------------------|-------------------------------------|----------------------|-------------------------|
| Date   | Meter<br>Reading | Total Use<br>(cubic<br>feet) | Total<br>(Therms) | Days<br>since<br>last<br>reading | Daily<br>therms | Reading                                | Total<br>Use<br>(cubic<br>feet) | Total<br>(Therms) | Daily<br>Therms |  | GrowHaus<br>(Therms)                | Farm %<br>of<br>GrowHau<br>s Therms | GrowHaus<br>Gas Bill | Gas Bill                |
| 1/6/2015   | 399,072          | 74,804.70                    | 748.047           | 34                               | 22              | 140,161.20                             |                                 |                   |                 | 748.05   | 2,857.00                            | 39.27%                              | \$1,514.21           | \$594.59                |
| 2/3/2015   | 449,779          | 50,707.00                    | 507.07            | 28                               | 18              | 140,161.20                             |                                 |                   |                 | 507.07   | 3,019.00                            | 26.62%                              | \$1,600.07           | \$425.90                |
| 2/28/2015  | 490,408          | 40,629.00                    | 406.29            | 25                               | 16              | 140,161.20                             |                                 |                   |                 | 406.29   | 2,210.00                            | 21.33%                              | \$1,171.30           | \$285.06                |
| 3/30/2015  | 526,383          | 35,975.00                    | 359.75            | 30                               | 12              | 140,161.20                             |                                 |                   |                 | 359.75   | 1,325.00                            | 20.60%                              | \$1,228.10           | \$253.04                |
| 4/30/2015  | 546,596          | 20,213.00                    | 202.13            | 31                               | 7               | 145,780.00                             | 5,618.80                        | 56                | 1.81            | 258.32   | 665.00                              | 38.84%                              | \$412.54             | \$160.25                |
| 6/2/2015   | 575,268          | 28,672.00                    | 133.658           | 33                               | 4               | 161,179.00                             | 15,399.00                       | 154               | 4.67            | 287.65   | 749.00                              | 38.40%                              | \$439.37             | \$168.74                |
| 7/2/2015   | 576,759          | 1,491.00                     | 149.1             | 30                               | 5               | 163,068.00                             | 1,889.00                        | 19                | 0.63            | 167.99   | 275.00                              | 61.09%                              | \$185.12             | \$113.08                |
| 8/4/2015   | 577,291          | 532.00                       | 53.2              | 33                               | 2               | 163,425.00                             | 357.00                          | 4                 | 0.11            | 56.77  | 96.00                               | 59.14%                              | \$88.96              | \$52.61                 |
| 9/5/2015   | 577,693          | 402.00                       | 40.2              | 32                               | 1               | 164,000.00                             | 575.00                          | 6                 | 0.18            | 45.95  | 63.00                               | 72.94%                              | \$71.88              | \$52.43                 |
| 10/6/2015  | 579,010          | 1,317.00                     | 13.17             | 31                               | 0               | 170,736.00                             | 6,736.00                        | 67                | 2.17            | 80.53  | 84.00                               | 95.87%                              | \$83.25              | \$79.81                 |
| 11/8/2015  | 589,710          | 10,700.00                    | 107               | 33                               | 3               | 190,488.00                             | 19,752.00                       | 198               | 5.99            | 304.52   | 1,228.00                            | 24.80%                              | \$168.01             | \$41.66                 |
| 12/4/2015  | 627,027          | 37,317.00                    | 373.17            | 26                               | 14              | 209,581.00                             | 19,093.00                       | 191               | 7.34            | 564.10   | 1,109.00                            | 50.87%                              | \$661.89             | \$336.67                |
| <b>Total 2015</b>                                | <b>0</b>         |                              | <b>3092.785</b>   |                                  | <b>9</b>        |  |                                 |                   | <b>2.86</b>     | <b>3,786.98</b>  | <b>13,680.00</b>                    |                                     | <b>\$7,624.70</b>    | <b>\$2,563.85</b>       |
| 1/7/2016   | 698,494          | 71,467.00                    | 714.67            | 34                               | 21              | 236,612.00                             | 27,031.00                       | 270               | 7.95            | 984.98   | 2,596.00                            | 37.94%                              | \$1,492.88           | \$566.43                |
| 2/15/2016  | 750,998          | 52,504.00                    | 525.04            | 39                               | 13              | 268,945.00                             | 32,333.00                       | 323               | 8.29            | 848.37   | 2,965.00                            | 28.61%                              | \$1,604.72           | \$459.16                |
| 3/5/2016   | 770,636          | 19,638.00                    | 196.38            | 19                               | 10              | 284,979.00                             | 16,034.00                       | 160               | 8.44            | 356.72   | 2,103.00                            | 16.96%                              | \$1,109.74           | \$188.24                |
| 4/9/2016   | 811,548          | 40,912.00                    | 409.12            | 35                               | 12              | 307,583.00                             | 22,604.00                       | 226               | 6.46            | 635.16   | 1,268.00                            | 50.09%                              | \$684.27             | \$342.76                |
| 5/12/2016  | 851,223          | 39,675.00                    | 396.75            | 33                               | 12              | 323,882.00                             | 16,299.00                       | 163               | 4.94            | 559.74   | 1,112.00                            | 50.34%                              | \$553.63             | \$278.68                |
| 6/5/2016   | 871,051          | 19,828.00                    | 198.28            | 24                               | 8               | 329,477.00                             | 5,595.00                        | 56                | 2.33            | 254.23   | 704.00                              | 36.11%                              | \$346.74             | \$125.22                |
| 7/1/2016   | 871,051          | 0.00                         | 0                 | 26                               | 0               | 329,477.00                             | 0.00                            | 0                 | 0.00            | 0.00   | 29.00                               | 0.00%                               | \$52.57              | \$0.00                  |
| 8/3/2016   | 871,156          | 105.00                       | 1.05              | 33                               | 0               | 329,477.00                             | 0.00                            | 0                 | 0.00            | 1.05   | 30.00                               | 3.50%                               | \$56.77              | \$1.99                  |
| 9/4/2016   | 872,150          | 994.00                       | 9.94              | 32                               | 0               | 330,126.00                             | 649.00                          | 6                 | 0.20            | 16.43  | 72.00                               | 22.82%                              | \$38.16              | \$8.71                  |
| 10/1/2016  | 873,987          | 1,837.00                     | 18.37             | 27                               | 1               | 337,410.00                             | 7,284.00                        | 73                | 2.70            | 91.21  | 112.00                              | 81.44%                              | \$59.36              | \$48.34                 |
| 11/5/2016  | 885,987          | 12,000.00                    | 120               | 35                               | 3               | 358,449.00                             | 21,039.00                       | 210               | 6.01            | 330.39   | 987.00                              | 33.47%                              | \$523.11             | \$175.11                |
| 12/1/2016  | 920,687          | 34,700.00                    | 347               | 26                               | 13              | 389,543.00                             | 31,094.00                       | 311               | 11.96           | 657.94   | 1,697.00                            | 38.77%                              | \$899.41             | \$348.71                |
| <b>Total 2016</b>                                |                  |                              | <b>2936.6</b>     |                                  | <b>8</b>        |  |                                 |                   | <b>4.94</b>     | <b>4,736.22</b>  | <b>13,675.00</b>                    |                                     | <b>\$7,421.36</b>    | <b>\$2,543.33</b>       |

Notes: Aquaponics Farm sq footage 2800, 2 modines at 90,000 BTUs each, operate together. GrowHaus gas consumption includes the Hydrofarm, AP farm (4 modines), market (1 heater), classrooms (1 heater), hot, waterheater, "hotdog" heaters in GrowAsis, Heater in office, gas hookup for cooktop.

Note: At the beginning of 2015 we lost all of the fish in the farm due to a power outage, during that time we reconfigured the fish system and ran the plant production in decoupled mode. We did not heat the aquaponic system water from January to early April as we would have normally. Water temperatures stayed between 58o - 65o F during that period based on ambient air temperature (we considered trout, but by february it was already too hot. No money was save in gas costs becuase while we were not heating the water, we were heating the air more to try and maintain a reasonable temperature for plant production and maintain bacteria and nitrification. Plant production slowed so significantly that we lost about \$3400 in revenue during the same time period. Heating is therefore a necessity if plant production and is going to be maintained through the winter months.