Q. Further to the response to Request for Information NP-NLH-069 (Revision 1, Dec 3-14):
Please provide a 5-year regression analysis and forecast conversion factor for 2015 based on data from the years 2001, 2002, 2003, 2004 and 2005.

A. Further to the response to Hydro's response to NP-NLH-069 (Revision 1, Dec 3-14), a five-year regression analysis (based on data from the years 2001-2005) for the Holyrood fuel conversion factor is presented in the following tables and chart. As in Hydro's Amended Application, the averages for Holyrood station service and fuel heating content for the five-year period June 2009 to May 2014 are used in calculation of fuel conversion rate.

Table 1 (Part 1 of 2)
Holyrood Fuel Conversion Rate
Data Used in the Regression Analysis

| Month | Year | Total Unit Operating Hours | Gross Average Unit Loading (kW) | Running Heat Content (BTU/US gal) | Gross Consumption Rate (bbl/Hr) |
|---|---|---|---|---|---|
| 1 | 2001 | 2225 | 96,239 | 158,958 | 144.2 |
| 2 | 2001 | 1942 | 95,277 | 152,788 | 144.7 |
| 3 | 2001 | 2121 | 102,909 | 152,279 | 155.2 |
| 4 | 2001 | 1411 | 138,277 | 152,021 | 206.4 |
| 5 | 2001 | 1483 | 99,676 | 151,291 | 153.7 |
| 6 | 2001 | 966 | 103,323 | 151,208 | 158.6 |
| 7 | 2001 | 542 | 116,458 | 153,616 | 179.2 |
| 8 | 2001 | 629 | 114,343 | 153,058 | 175.0 |
| 9 | 2001 | 1397 | 110,985 | 152,438 | 167.1 |
| 10 | 2001 | 1791 | 136,649 | 153,728 | 200.0 |
| 11 | 2001 | 2038 | 147,405 | 153,288 | 216.6 |
| 12 | 2001 | 2107 | 153,367 | 153,175 | 224.1 |
| 1 | 2002 | 2,107 | 156,173 | 153,118 | 233.8 |
| 2 | 2002 | 1,994 | 154,245 | 152,668 | 220.0 |
| 3 | 2002 | 1,926 | 151,388 | 153,593 | 223.4 |
| 4 | 2002 | 1,553 | 140,931 | 154,473 | 205.0 |
| 5 | 2002 | 1,458 | 116,855 | 153,726 | 171.4 |
| 6 | 2002 | 898 | 116,526 | 154,236 | 171.4 |
| 7 | 2002 | 157 | 119,255 | 154,273 | 170.5 |
| 8 | 2002 | 522 | 119,136 | 154,193 | 178.8 |
| 9 | 2002 | 1,235 | 118,757 | 154,172 | 174.0 |
| 10 | 2002 | 1,719 | 141,690 | 153,234 | 208.0 |
| 11 | 2002 | 2,100 | 150,903 | 152,953 | 219.7 |
| 12 | 2002 | 2,047 | 146,694 | 153,562 | 215.1 |

Table 1 (Part 2 of 2)
Holyrood Fuel Conversion Rate
Data Used in the Regression Analysis

| Month | Year | Total Unit Operating Hours | Gross Average Unit Loading (kW) | Running Heat Content (BTU/US gal) | Gross Consumption Rate (bbl/Hr) |
|---|---|---|---|---|---|
| 1 | 2003 | 2,225 | 159,039 | 153,747 | 233.1 |
| 2 | 2003 | 1,939 | 152,905 | 154,106 | 226.9 |
| 3 | 2003 | 2,108 | 144,146 | 153,690 | 212.6 |
| 4 | 2003 | 1,438 | 141,391 | 153,928 | 210.2 |
| 5 | 2003 | 1,298 | 88,466 | 152,982 | 136.8 |
| 6 | 2003 | 621 | 72,658 | 152,831 | 114.9 |
| 7 | 2003 | 0 | 0 | 152,831 | 0.0 |
| 8 | 2003 | 394 | 109,402 | 152,512 | 167.8 |
| 9 | 2003 | 951 | 121,437 | 152,563 | 184.4 |
| 10 | 2003 | 1,913 | 122,562 | 152,996 | 183.5 |
| 11 | 2003 | 1,390 | 106,016 | 152,773 | 156.7 |
| 12 | 2003 | 2,061 | 98,331 | 153,243 | 148.5 |
| 1 | 2004 | 2,101 | 106,002 | 153,968 | 157.9 |
| 2 | 2004 | 2,076 | 120,034 | 152,926 | 181.8 |
| 3 | 2004 | 1,951 | 130,734 | 153,365 | 196.3 |
| 4 | 2004 | 1,616 | 131,689 | 153,786 | 195.0 |
| 5 | 2004 | 730 | 112,977 | 153,983 | 169.7 |
| 6 | 2004 | 624 | 69,805 | 154,373 | 109.5 |
| 7 | 2004 | 0 | 0 | 154,373 | 0.0 |
| 8 | 2004 | 500 | 113,318 | 154,316 | 168.8 |
| 9 | 2004 | 782 | 114,773 | 154,588 | 170.7 |
| 10 | 2004 | 1,220 | 84,154 | 154,184 | 127.4 |
| 11 | 2004 | 1,515 | 115,631 | 154,168 | 169.8 |
| 12 | 2004 | 1,894 | 133,981 | 154,665 | 197.9 |
| 1 | 2005 | 2,232 | 114,830 | 154,005 | 170.0 |
| 2 | 2005 | 1,869 | 135,930 | 154,433 | 199.0 |
| 3 | 2005 | 2,185 | 118,112 | 154,618 | 177.0 |
| 4 | 2005 | 1,299 | 84,756 | 154,920 | 131.6 |
| 5 | 2005 | 288 | 69,411 | 154,994 | 111.7 |
| 6 | 2005 | 81 | 99,877 | 154,994 | 151.3 |
| 7 | 2005 | 643 | 115,827 | 154,994 | 173.0 |
| 8 | 2005 | 376 | 99,757 | 155,188 | 151.7 |
| 9 | 2005 | 678 | 92,637 | 155,241 | 144.4 |
| 10 | 2005 | 1,165 | 91,479 | 155,062 | 139.3 |
| 11 | 2005 | 1,420 | 82,662 | 153,319 | 126.4 |
| 12 | 2005 | 1,655 | 65,648 | 153,957 | 105.5 |

## Table 2

**2001-2005 Linear Regression (Gross)**

SUMMARY OUTPUT

| *Regression Statistics* | |
|---|---|
| Multiple R | 0.99748442 |
| R Square | 0.99497517 |
| Adjusted R Square | 0.99479245 |
| Standard Error | 2.39399895 |
| Observations | 58 |

ANOVA

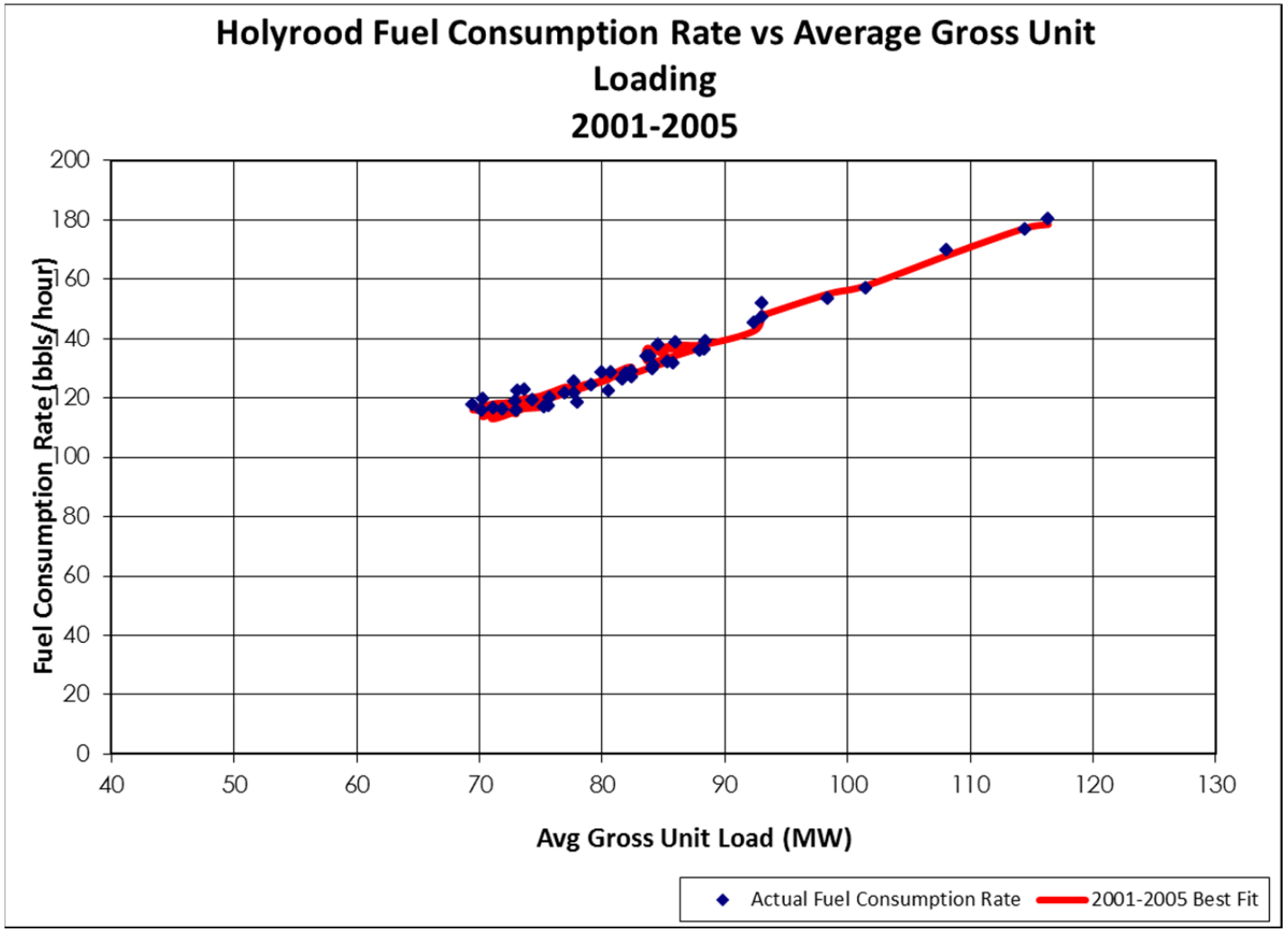
| | *df* | *SS* | *MS* | *F* | *Significance F* |
|---|---|---|---|---|---|
| Regression | 2 | 62416.82007 | 31208.41 | 5445.32409 | 6.03717E-64 |
| Residual | 55 | 315.2177029 | 5.73123096 | | |
| Total | 57 | 62732.03777 | | | |

| | *Coefficients* | *Standard Error* | *t Stat* | *P-value* | *Lower 95%* | *Upper 95%* | *Lower 95.0%* | *Ipper 95.0%* |
|---|---|---|---|---|---|---|---|---|
| Intercept | 102.804855 | 43.30692468 | 2.37386643 | 0.02112175 | 16.01583817 | 189.593871 | 16.0158382 | 189.594 |
| | 0.00136435 | 1.33469E-05 | 102.22275 | 2.0093E-64 | 0.001337605 | 0.0013911 | 0.0013376 | 0.00139 |
| | -0.0005696 | 0.000279644 | -2.036947 | 0.04647975 | -0.001130039 | -9.201E-06 | -0.00113 | -9.2E-06 |

**Calculation of Fuel Conversion Rate:**

| | | | |
|---|---|---|---|
| 1 | Unit net average loading (kW) | 109,570 | |
| 2 | Fuel Heating Content (BTU/US gal) | 152,400 | |
| 3 | Station Service Factor | 6.61% | |
| 4 | Unit gross average loading (kW) | 117,330 | Line 1/(1-Line 3) |
| 5 | Coefficient 1 | 0.00136 | (from regression equation) |
| 6 | Coefficient 2 | -0.00057 | (from regression equation) |
| 7 | Intercept | 102.8049 | (from regression equation) |
| 8 | Fuel consumption rate (bbls/hour) | 176.07 | Line 7 + (Line 4 x Line 5) + (Line 2 x Line 6) |
| 9 | Net fuel conversion factor (kWh/bbl) | **622** | Line 1/Line 8 |

**Chart 1**


Holyrood Fuel Consumption Rate vs Average Gross Unit Loading
2001-2005
Fuel Consumption Rate (bbls/hour)
200
180
160
140
120
100
80
60
40
20
0
40
50
60
70
80
90
100
110
120
130
Avg Gross Unit Load (MW)
Actual Fuel Consumption Rate
2001-2005 Best Fit