BC Hydro Site Types Weather Sensitivities

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BC hydro
FOR GENERATIONS

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Purpose of this project

The goal was to quantify BC Hydro site types weather sensitivities to contribute to knowledge enabling more effective use of the electric grid.

Another intent was to discover the most weather sensitive site types to be used in a later project to delineate climate zones relevant to BC Hydro's operations.

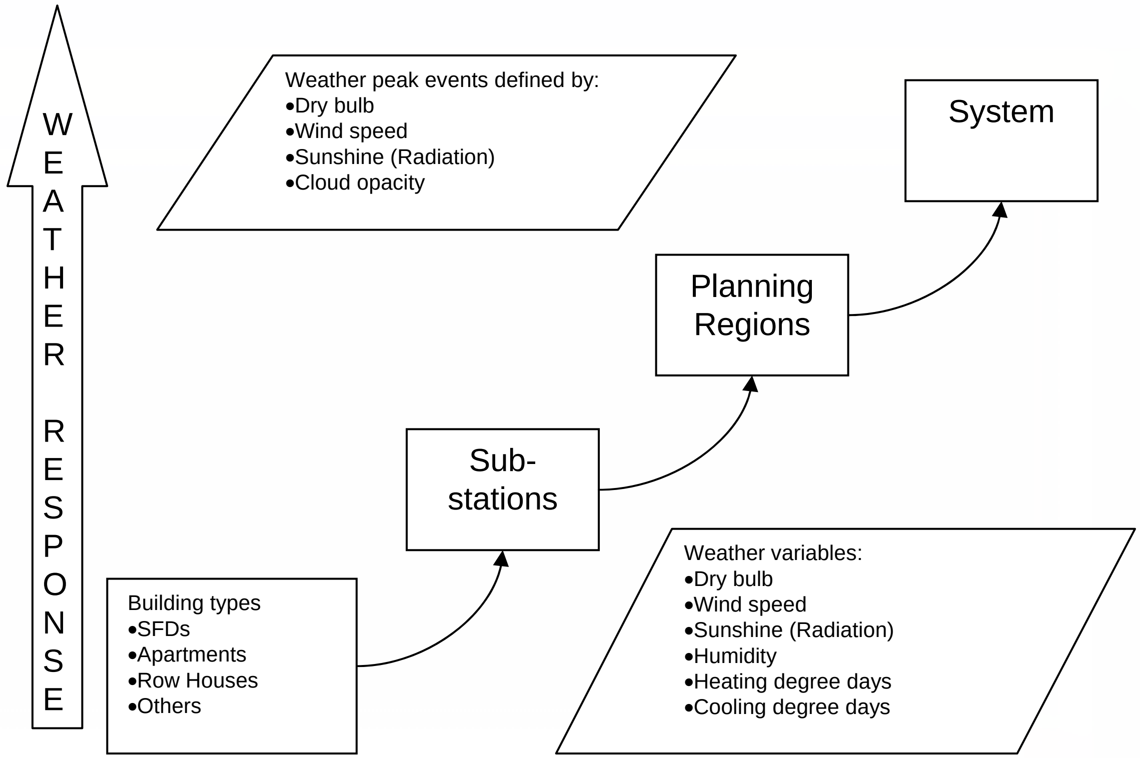
Essential findings and results

- Quantification for nineteen site types of:
  - Balance Point Temperatures
  - Base Consumption
  - Relative Weather Sensitivity
- Balance Point Temperatures and Weather Sensitivities are not constant but vary between site types and with time of day and seasons
- Weather sensitivity for the BC Hydro system is highest in Winter/Shoulder months and lowest in Summer

Electrical hourly demand relationship to weather

Electrical energy use by appliances with thermostats:

- Space heating/cooling systems
- Indoor hot water systems
- Refrigerators
- Freezers



A model for analysing weather response creating hourly demand in an electrical utility distribution system—building type starting point (based on Nelson, 2003; 2004). SFD = Single family dwelling

Reasons for weather sensitivity of site types (buildings)

Electrical energy use in buildings is linked to outdoor temperature via the following systems and appliances with temperature regulators (thermostats):

- Space heating/cooling systems
- Indoor hot water systems
- Refrigerators
- Freezers

Thermal characteristics of the building envelope affect the link as do details of building occupancy.

The relative importance of systems/appliances with temperature regulators is apparent from the two Tables at right. The possibility of complex interactions between systems/appliances was noted by de Dear and Hart (2002). For example, using space heaters influences the amount of energy consumed by water heaters, refrigerators, and freezers.

Residential consumption of electrical energy
Natural Resources Canada, Office of Energy Efficiency (2007)

End-use	**Proportion of total residential sector electrical energy consumption**
Space Heating/Cooling	65%
Water Heating	18%
Appliances	13%
Total	*96%*

Balance of 4% is lighting

Weather sensitivity of systems/appliances
(de Dear and Hart, 2002)

System/appliance	**Proportion of variance in energy end-use accounted for by weather fluctuations**
Freezers	67%
Room heaters	63%
Air conditioning	59%
Refrigeration	42%

Weather-related hourly demand (1 of 5)

BPT is a steady-state energy flow concept and may not always be appropriate for hourly data

According to ASHRAE (2005, Fundamentals):

-"Heating degree-days or degree-hours for a balance point temperature [BPT] of 18.3°C have been widely tabulated (this temperature represents average conditions in typical buildings in the past. The 18.3°C base is assumed whenever [the balance point temperature of a building] is not indicated explicitly" (p. 32.18)

-"Typical buildings have time constants that are about 1 day, and a building's thermal inertia essentially averages over the diurnal variations, especially if [the interior temperature] is allowed to float." (p. 32.19)

Weather-related hourly demand (2 of 5)

According to Taylor and Buizza, the National Grid serving England and Wales models demand with three weather variables: effective temperature, cooling power of the wind, and effective illumination (radiation). Effective temperature, t_{eff}, is a variable that introduces a lag simulating the response of electric heaters to changes in outdoor temperature.

$$t_{eff} = \tfrac{1}{2} \left[\sum (t_i , t_{i-1} , t_{i-2} , t_{i-3}) / 4 \right] + \tfrac{1}{2} (t_{i-24}); \; i = 1 \text{ to } 4 \qquad (1)$$

where the first term on the right-hand-side of the equation is the mean of the spot temperature recorded for each of the four previous hours and i is hour.

Weather-related hourly demand (3 of 5)

The cooling power of wind, CP_t, variable which is a non-linear function of wind speed and average temperature) simulates load variation caused by drafts. W_t is wind speed.

$$CP_t = \begin{cases} W_t^{1/2}\,(18.3 - TO_t) & \text{if} \quad TO_t < 18.3\ ^\circ C \\ 0 & \text{if} \quad TO_t \geq 18.3\ ^\circ C \end{cases} \qquad (2)$$

The effective illumination (radiation) variable is a function of visibility, number and type of cloud, and amount and type of precipitation. But, this is a complicated relationship, so Taylor and Buizza found it more practical to use cloud cover, CC_t, to represent effective illumination (radiation).

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Weather-related hourly demand (4 of 5)

The expression for weather-related demand, WRD, by Taylor and Buizza is a non-linear function of temperature, wind speed, and cloud cover. The non-linearity is a result of the $t_{eff}^{\,2}$ term in equation (3) and the $W_t^{1/2}$ term in equation (2).

$$WRD = \hat{a}_1 t_{eff} + \hat{a}_2 t_{eff}^2 + \hat{a}_3 CP_t + \hat{a}_4 CC_t \qquad (3)$$

where $\hat{a}_n$ are constants

Weather-related hourly demand (5 of 5)

Attractive as it would have been to use Taylor and Buiza's equation, the energy consumption data for site types in BC are available only as aggregate values for the entire province. This is because many site types have low sample populations. Applying Vancouver's local wind speed and local cloud cover components to the equation would be meaningless for the rest of BC.

The T & B equation is recorded here in anticipation of local/regional data becoming available in the future as sample populations increase.

In the meantime, it was decided to use degree-hours for heating (DH_h) and degree-hours for cooling (DH_c) as the basic parameter for the weather sensitivity analyses.

$DH_h = t_{bal} - t_{db}$ if $t_{db} < t_{bal}$; $DH_h = 0$ if $t_{db} \geq t_{bal}$ (4)

$DH_c = t_{db} - t_{bal}$ if $t_{db} > t_{bal}$; $DH_c = 0$ if $t_{db} \leq t_{bal}$ (5)

where t_{db} is dry bulb temperature and t_{bal} is balance point temperature.

Dry bulb temperatures were available from Environment Canada data archived by BC Hydro Load Research. Balance point temperatures were calculated hourly for each site type.

Energy consumption for each site type was normalized by dividing each hourly consumption value by the annual total consumption for the site type.

Scope of weather sensitivity analyses and data source

Scope

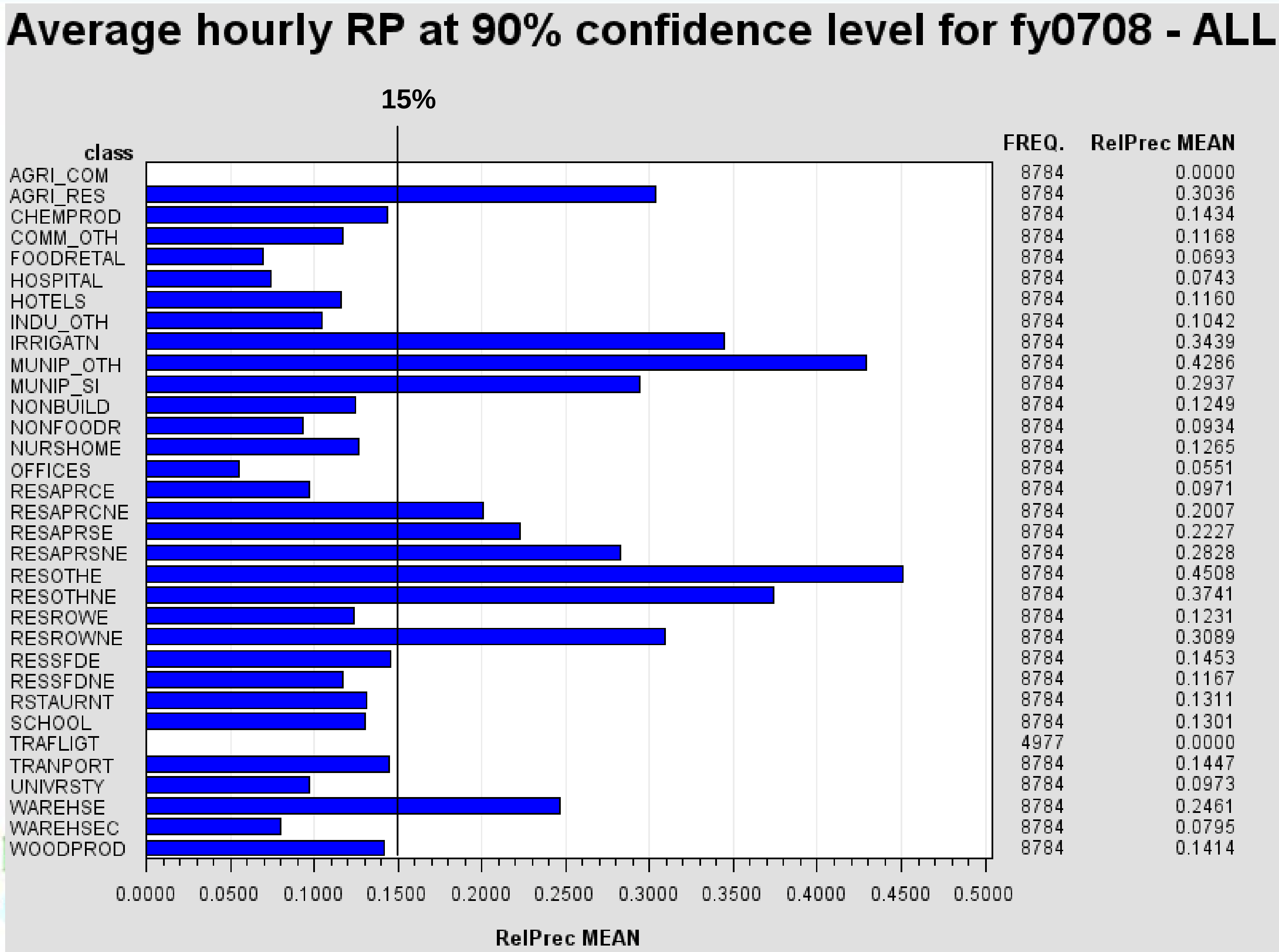
BC Hydro Load Research has defined 33 site types (building types). Data quality is variable, however. Therefore, it was decided to limit the scope of the analyses to those site types which had an average hourly relative precision of 15% or less (90% confidence level; Data from F0708). The relative precision data and short list of site types to analyze are presented on the next two slides.

Data Source

Environment Canada hourly temperature data from Vancouver International Airport (YVR) was used as the primary weather variable. Degree hours for heating and cooling were calculated from this data using hourly balance point temperatures as explained elsewhere in this document. Although the temperatures were from observations at YVR, they were taken to represent outdoor air temperatures influencing all the site types throughout BC. Degree-day relationships between Vancouver-Victoria, Vancouver-Prince George, and Vancouver-Kelowna were shown to be statistically significant by Wahlgren (2010). Therefore, Vancouver degree-days or degree-hours can act as surrogate weather variables for site types throughout BC

Unless otherwise indicated, the balance point temperatures, base consumption values, and relative weather sensitivities were calculated using three years of hourly temperature data from F0607, F0708, and F0809. This was done to attenuate the effect of inter-annual variability in weather patterns.

Relative precision chart from Load Research archived data



Short-list of site types to analyze - average relative precision $\leq$ 15%

- •CHEMPROD
- •COMM_OTH
- •FOODRETAL
- •HOSPITAL
- •HOTELS
- •INDU_OTH
- •NONBUILD
- •NONFOODR
- •NURSHOME
- •OFFICES
- •RESAPRCE
- •RESROWE
- •RESSFDE
- •RESSFDNE
- •RSTAURNT
- •SCHOOL
- •TRANPORT
- •UNIVRSTY
- •WAREHSEC

This list comprises 19 of the 33 site types.

Site Type Code Table

AGRI_COM	Agriculture, commercial
AGRI_RES	Agriculture, residential
CHEMPROD	Chemical products
COMM_OTH	Commercial, other
FOODRETAL	Food, retail
HOSPITAL	Hospital
HOTELS	Hotels
INDU_OTH	Industrial, other
IRRIGATN	Irrigation
MUNIP_OTH	Municipal, other
MUNIP_SI	Municipal, Southern Interior
NONBUILD	Non-buildings
NONFOODR	Non-food retailer
NURSHOME	Nursing home
OFFICES	Offices
RESAPRCE	Residential Apartments Common Areas Electrically Heated
RESAPRCNE	Residential Apartments Common Areas Non-Electrically Heated
RESAPRSE	Residential Apartment Suite Electrically Heated
RESAPRSNE	Residential Apartment Suite Non-Electrically Heated
RESOTHE	Residential, other, electric
RESOTHNE	Residential, other, non-electric
RESROWE	Residential, row house, electric
RESROWNE	Residential, row house, non-elec.
RESSFDE	Residential, single family / duplex dwelling, electric
RESSFDNE	Residential, single family / duplex dwelling, non-electric
RSTAURNT	Restaurant
SCHOOL	School
TRAFLIGT	Street lighting
TRANPORT	SkyTrain and stations
UNIVRSTY	University
WAREHSE	Warehouse
WAREHSEC	Warehouse, refrigerated cold storage
WOODPROD	Wood products industry

Relative precision = $Z_{\alpha/2}\, s_{\bar{u}} / \bar{u}$, where $Z_{\alpha/2}$ = value obtained from the Standard Normal Table corresponding to the probability $\alpha/2$ in the upper tail, $s_{\bar{u}}$ is the standard error of the estimation variable, and $\bar{u}$ is the estimated value u. Note that the numerator of the expression is the absolute precision so it can be said, “ the relative precision is the ratio of the absolute precision to the estimated value…” (AEIC, 2001, p. 7-5). Precision is a measure of the sample estimate. Data with higher quality has lower relative precision values.

Quantitative Estimates of Balance Point Temperature (1 of 2)

BPT estimate too low → Overestimate energy consumption corresponding to a given degree · time unit

BPT estimate too high → Underestimate energy consumption corresponding to a given degree · time unit

The theory and method outlined by Day (2006) was used.

Theory: "…if all other factors are reasonably constant, space heating energy consumption is proportional to changes in outdoor temperature (a similar assertion can be made for cooling energy)." Energy consumption is proportional to degree-hours:

$$F = U' \, DH / \eta \qquad (6)$$

where F is fuel consumption (kWh), U' is building heat loss coefficient ($kW \cdot K^{-1}$); heating or cooling power required to maintain a constant temperature inside building volume when outdoor temperature changes); DH is degree-hour; and η is heating or cooling system efficiency.

.Building energy consumption against degree-hours:

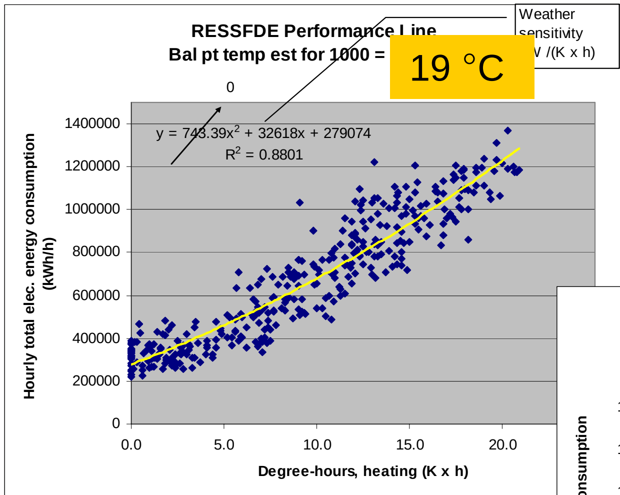
$$F = \alpha \, DH + \beta \qquad (7)$$

Where β is the y-axis intercept, representing the building's base load energy consumption. The slope of the line, α is related to the building heat loss coefficient: by

$$\alpha = F / DH = U' / \eta \qquad (8)$$

For equation (8) to be true and for β to represent the true base load, DH must be calculated to the building (type) specific balance point temperature.

Quantitative Estimates of Balance Point Temperature (2 of 2)

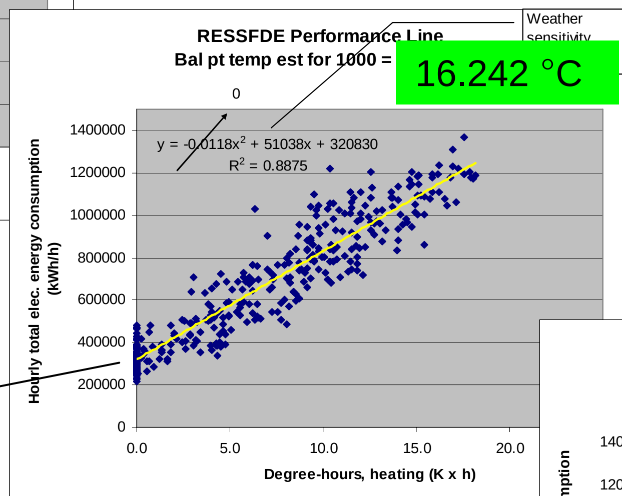


Bal pt temp too high → Curve is convex downwards

Estimation method uses a polynomial line of best fit (order 2):

$y = \alpha' x^2 + \alpha x + \beta$ (9)

Goal is to select a balance point temperature that minimizes α', and in fact makes it approach zero. The remaining terms comprise the linear equation (7) relating energy consumption to degree-hours with a base load

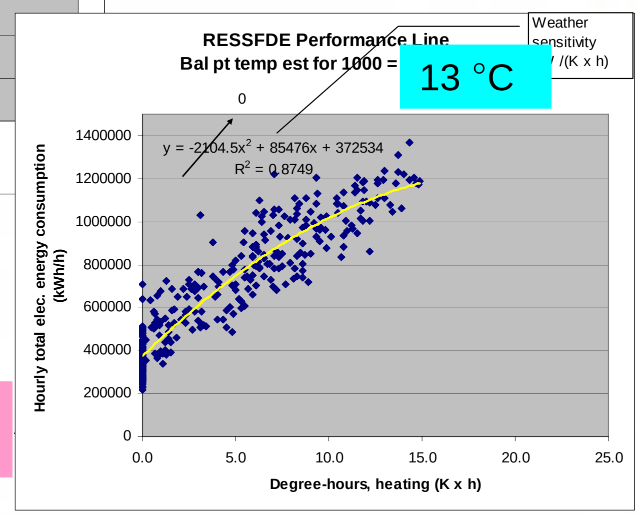


Bal pt temp just right → Curve is linear

The goal-seeking process was easily done in less than a minute using an Excel spreadsheet model. To collect all the data required for this project, a SAS program was developed (by Scott Albrechtsen, Load Research Analyst, BC Hydro) to automate this process.

True **hourly base load**, 320,830 kWh/h (not related to energy consumption by weather sensitive thermo-regulated devices) is the **y-intercept** in the linear equation.

The **slope of the equation**, 51,038 (kWh/h)/(K x h) or 51, 038 kW/(K x h) is a **measure of weather sensitivity.**



Bal pt temp too low → Curve is convex upwards

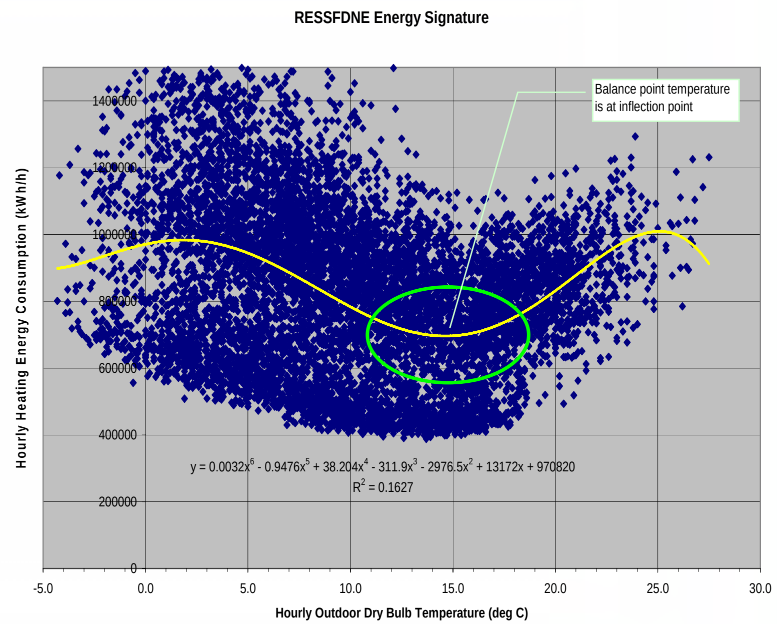
Compare another way of estimating balance point temperature (1 of 2)

A standard chart used by load research analysts is the Energy Signature. An example is shown at right.

In this case, the energy signature was modelled by a sixth order polynomial, namely,

$$y = 0.0032x^6 - 0.9476x^5 + 38.204x^4 - 311.9x^3 - 2976.5x^2 + 13172x + 970820$$

The evidence of two sample populations in this and other charts for various site types was explained by charting separate energy signatures for 03:00 and 20:00 corresponding to BC Hydro's System daily consumption minimum and maximum respectively. Analyses by hour were unaffected by the dual population phenomenon.



Compare another way of estimating balance point temperature (2 of 2)

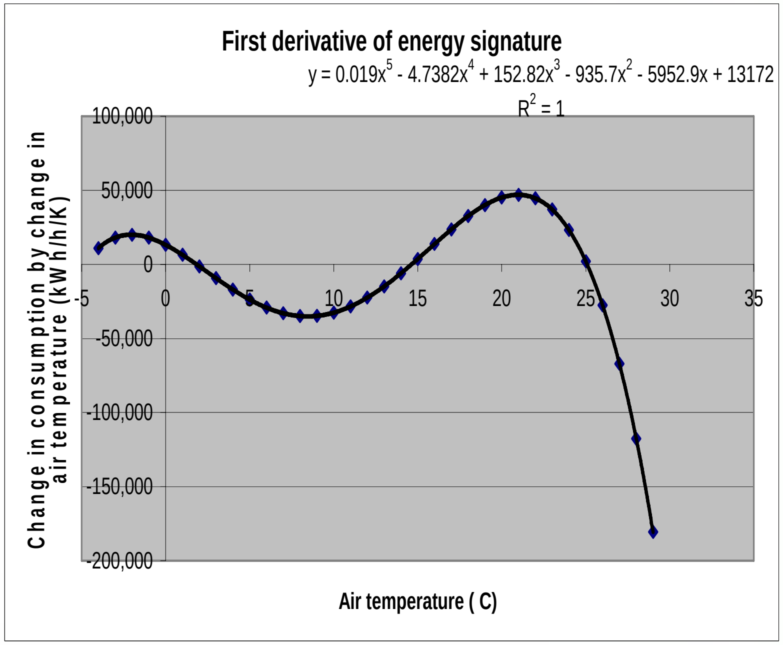
The first derivative of the Energy Signature is a fifth order polynomial, namely,

$y = 0.019x^5 - 4.7382x^4 + 152.82x^3 - 935.7x^2 - 5952.9x + 13172$

The x-values where the first derivative graph crosses the x-axis (y = 0) correspond to the inflection points of the Energy Signature graph. Inflection points exist at 2, 15, and 25 deg C. For buildings in BC, the balance point temperature is most likely to be 15°C. The inflectionpoints at 2 and 25 deg C are discarded as balance point candidates.

The first derivative may be solved for x using Newton's method with software such as MS-Excel Solver. That is, Solver is used to find the roots of the first derivative equation.

Tests showed agreement between the two methods of determining the balance point. In the example for RESSFDNE shown here, the method using the SAS program yielded BPT = 14.694 °C while Solver gave BPT as 14.629 °C. When rounded to a tenth of a degree, the difference between the two results is an acceptable 0.1 °C.



Balance Point Temperature (°C) Summary Table

Season	Shape	Label for chart	_0_00_00	_1_00_00	_2_00_00	_3_00_00	_4_00_00	_5_00_00	_6_00_00	_7_00_00	_8_00_00	_9_00_00	_10_00_0C	_11_00_0C	_12_00_0C	_13_00_0C	_14_00_0C	_15_00_0C	_16_00_0C	_17_00_0C	_18_00_0C	_19_00_0C	_20_00_0C	_21_00_0C	_22_00_0C	_23_00_00	
F06-F09	Site Type	Time of Day	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	Average Hourly BPT
All	CHEMPROD		9.5	9.1	8.9	8.5	8.5	8.7	9.1	10.1	10.7	10.8	11.6	12.2	12.4	12.7	12.3	12.0	11.9	11.2	11.3	11.2	10.9	10.5	10.5	10.2	10.6
All	COMM_OTH		13.0	12.6	11.7	11.8	11.0	11.6	13.4	14.1	14.5	16.0	16.0	16.0	15.7	15.4	15.2	15.2	14.6	14.4	15.7	17.2	16.7	14.7	13.6	13.2	14.3
All	FOODRETAL		27.1	15.6	10.4	11.5	22.0	12.7	14.0	14.8	16.4	16.9	19.8	20.5	23.6	27.5	27.0	22.8	26.2	29.1	23.7	26.0	19.9	19.9	16.5	15.7	20.0
All	HOSPITAL		9.6	9.2	9.4	9.7	10.1	9.7	5.0	9.7	9.5	5.9	5.0	5.2	10.2	6.1	8.7	8.7	10.4	11.9	10.5	11.4	11.6	11.4	10.3	10.1	9.1
All	HOTELS		5.2	5.8	6.2	5.6	6.0	6.4	5.8	5.7	6.3	6.5	8.3	8.9	8.9	8.8	8.6	9.3	9.0	8.4	8.3	8.6	8.3	7.2	6.1	5.2	7.2
All	INDU_OTH		16.0	17.2	17.9	19.3	28.8	30.0	17.8	9.3	6.5	5.6	28.6	6.2	5.8	7.2	6.2	18.4	17.5	16.8	16.4	18.3	28.1	24.4	17.8	16.2	16.5
All	NONBUILD		10.1	10.3	10.0	9.8	9.7	9.9	9.8	10.3	11.2	11.7	12.3	12.6	12.7	12.9	12.5	12.5	12.0	12.0	11.5	11.4	11.4	11.1	10.7	10.7	11.2
All	NONFOODR		9.3	8.9	8.6	8.7	7.8	6.2	5.0	20.9	29.4	29.5	28.6	23.3	29.9	29.1	27.0	26.0	28.5	6.3	10.3	9.5	5.4	10.5	10.0	8.8	16.1
All	NURSHOME		11.8	11.6	11.6	11.4	11.4	11.2	10.2	11.7	11.1	11.7	11.8	12.9	12.6	11.7	12.4	12.5	11.7	11.6	10.7	12.2	12.4	12.1	12.0	11.9	11.8
All	OFFICES		13.5	13.3	13.1	12.9	13.0	12.7	11.4	7.8	5.6	9.6	5.0	7.6	7.7	29.6	25.3	28.3	6.2	11.8	12.9	12.6	12.9	13.1	13.1	13.2	13.0
All	RESAPRCE		16.1	16.5	16.9	17.4	18.2	25.0	18.9	18.8	23.6	19.7	19.7	19.4	18.8	18.5	18.5	19.0	18.8	18.4	18.5	18.3	18.3	16.9	16.7	16.1	18.6
All	RESROWE		17.4	17.0	17.8	17.8	23.8	19.7	17.8	19.9	19.5	18.5	18.0	18.1	18.0	18.2	18.1	18.3	18.2	17.9	17.9	17.8	17.7	17.1	17.2	17.3	18.3
All	RESSFDE		15.8	15.6	15.1	15.2	15.5	16.3	20.1	20.0	30.0	27.3	18.4	18.2	17.8	17.5	17.5	17.6	17.5	17.6	18.1	18.3	17.9	17.1	16.5	16.1	18.2
All	RESSFDNE		11.1	10.5	9.6	9.3	9.7	9.2	8.9	10.6	14.2	12.8	11.9	12.0	12.2	12.1	11.5	11.1	10.3	10.6	13.3	13.8	13.2	11.4	11.4	11.2	11.3
All	RSTAURNT		6.9	5.0	5.0	5.0	5.0	26.2	14.4	16.9	28.1	27.7	26.8	20.1	25.9	28.5	22.8	26.2	25.1	25.7	24.8	6.4	5.6	5.0	6.7	6.9	16.5
All	SCHOOL		15.4	15.1	14.6	14.7	15.8	19.3	17.7	20.0	5.0	7.3	28.2	22.8	24.0	26.4	26.4	25.2	25.9	28.5	24.3	23.4	26.4	26.0	19.6	16.3	20.3
All	TRANPORT		13.1	13.4	12.9	12.7	13.5	13.2	14.0	16.2	13.9	13.4	14.3	14.0	13.3	13.4	14.4	13.3	13.5	13.4	15.1	15.5	15.0	13.9	13.7	13.1	13.8
All	UNIVRSTY		12.0	10.3	9.8	9.2	9.0	5.8	5.0	5.0	5.0	6.7	5.4	5.0	5.5	5.0	5.0	12.6	13.8	14.6	14.8	15.4	15.5	15.6	14.9	13.6	9.8
All	WAREHSEC		5.0	5.1	6.4	5.0	5.7	6.7	5.0	5.7	5.0	6.3	5.0	8.0	9.8	11.2	11.4	11.2	10.4	10.6	10.1	10.4	9.0	6.9	7.0	8.5	7.7
Shoulder	CHEMPROD		12.6	10.8	11.0	11.3	12.0	12.4	12.6	12.6	13.2	14.3	14.7	15.7	16.5	15.3	15.5	15.2	8.2	14.2	14.3	13.4	13.0	13.4	5.6	14.2	13.0
Shoulder	COMM_OTH		9.5	8.9	7.9	8.0	8.5	9.1	10.5	14.3	14.6	14.9	14.0	12.6	12.2	12.9	7.1	12.9	12.5	13.2	15.2	15.5	13.7	11.0	6.1	9.6	11.4
Shoulder	FOODRETAL		23.8	17.2	12.3	13.5	14.2	5.0	13.5	11.6	13.2	8.0	19.7	22.0	23.4	23.6	24.5	8.7	28.5	8.8	27.2	25.4	26.6	27.6	16.5	17.2	18.0
Shoulder	HOSPITAL		28.1	6.9	10.6	5.1	11.1	9.5	12.8	11.3	5.0	11.3	11.9	9.5	24.4	24.4	25.3	25.8	27.1	27.5	26.3	24.0	7.4	7.4	6.0	5.7	15.2
Shoulder	HOTELS		9.4	9.7	9.4	9.7	10.9	11.0	11.3	14.1	14.8	13.8	13.8	14.5	14.0	14.6	14.3	12.1	11.3	11.0	13.1	13.3	13.2	6.6	11.5	10.2	12.0
Shoulder	INDU_OTH		12.4	12.2	11.3	11.1	12.2	14.0	5.0	11.6	13.7	11.3	13.4	21.0	10.6	22.3	26.3	24.5	10.2	12.6	11.5	6.4	11.8	11.5	13.0	12.7	13.4
Shoulder	NONBUILD		8.3	9.9	8.4	7.9	7.1	7.6	7.6	8.5	7.2	8.4	7.4	20.7	8.5	8.5	8.5	23.6	29.9	27.9	26.4	7.1	9.6	9.8	9.6	9.8	12.0
Shoulder	NONFOODR		10.0	8.5	8.4	8.5	9.7	9.8	8.4	6.5	6.7	8.6	22.8	23.7	24.8	25.3	26.6	26.5	29.8	30.0	28.0	6.9	29.9	9.3	10.3	10.4	16.2
Shoulder	NURSHOME		12.2	11.0	11.1	10.5	11.7	11.8	11.2	11.9	13.1	13.1	13.2	12.1	12.1	13.0	12.6	12.9	13.2	13.8	13.9	13.0	12.4	12.3	12.7	12.3	12.4
Shoulder	OFFICES		12.3	12.0	11.4	11.2	12.7	12.8	11.4	10.3	10.3	10.5	9.5	23.2	24.6	8.5	8.2	27.0	29.8	29.6	28.3	9.2	11.3	11.5	12.1	12.3	15.0
Shoulder	RESAPRCE		17.3	16.4	16.6	16.8	15.7	15.8	15.5	15.7	18.0	20.5	18.3	17.5	17.5	18.0	18.1	18.3	18.2	17.4	18.3	17.3	16.6	16.2	16.8	15.8	17.2
Shoulder	RESROWE		14.6	12.9	12.9	12.9	13.6	14.8	13.7	13.6	15.2	14.7	14.4	14.7	15.4	15.9	15.7	16.0	15.4	15.2	15.6	15.5	15.2	14.9	14.8	14.4	14.7
Shoulder	RESSFDE		15.8	17.8	16.6	17.0	16.0	16.0	16.0	16.2	18.9	22.2	18.3	17.9	18.0	18.3	18.0	17.3	17.8	17.6	18.5	17.6	17.1	15.9	16.5	16.2	17.4
Shoulder	RESSFDNE		9.6	6.2	9.2	8.5	9.1	9.7	10.3	11.9	14.0	13.2	13.8	15.5	15.1	15.0	14.6	15.1	16.5	15.9	15.2	14.6	11.9	10.8	10.4	10.6	12.4
Shoulder	RSTAURNT		27.1	8.3	8.2	8.2	9.8	6.5	7.9	8.6	7.9	11.4	13.1	20.2	20.6	8.1	9.2	9.7	29.9	11.7	8.1	9.4	29.1	28.5	17.6	17.6	14.0
Shoulder	SCHOOL		13.1	12.3	11.1	10.9	13.6	13.5	12.6	12.3	18.5	12.2	8.9	20.9	21.1	7.4	26.6	24.7	13.4	13.7	11.3	10.6	12.4	12.4	12.5	12.3	14.1
Shoulder	TRANPORT		10.0	9.2	9.0	7.0	12.1	10.9	6.1	9.4	11.2	11.4	11.3	10.9	8.3	11.4	11.3	10.6	12.4	13.0	14.0	12.9	12.0	11.5	12.5	11.1	10.8
Shoulder	UNIVRSTY		10.0	5.7	8.1	7.0	8.0	8.8	5.2	6.1	8.9	5.8	9.1	20.7	22.1	8.4	24.9	23.7	26.8	9.0	9.6	9.8	10.2	10.4	10.7	10.3	11.6
Shoulder	WAREHSEC		9.7	9.7	10.0	8.2	8.7	7.9	9.6	9.2	10.0	11.0	12.0	12.1	12.9	14.6	13.7	11.1	12.4	14.8	13.3	13.0	13.9	11.7	9.8	9.6	11.2
Summer	CHEMPROD		17.3	17.3	19.5	18.9	16.0	13.0	14.3	12.7	27.7	14.8	14.9	23.1	29.6	12.9	13.2	13.7	27.0	16.2	13.7	11.4	14.6	15.3	14.7	15.2	17.0
Summer	COMM_OTH		9.9	20.4	20.0	21.9	19.2	19.6	20.2	18.9	20.0	28.9	17.4	20.9	26.6	28.8	22.6	25.7	26.0	27.3	27.8	22.7	17.9	10.4	22.4	10.1	21.1
Summer	FOODRETAL		19.6	17.6	19.6	18.6	18.9	19.9	20.3	19.6	17.1	24.9	23.5	23.5	29.1	29.0	26.4	26.8	27.5	26.5	26.9	25.4	24.2	12.0	21.9	22.1	22.5
Summer	HOSPITAL		22.2	22.1	20.5	20.4	19.2	18.4	16.1	12.7	23.1	13.3	23.4	23.5	29.3	29.7	12.6	13.3	27.4	27.0	25.7	27.6	24.9	22.6	21.1	22.3	21.6
Summer	HOTELS		22.7	22.4	21.4	20.9	21.1	18.1	16.0	16.9	18.3	19.8	20.6	21.3	22.3	23.5	26.3	26.3	27.3	26.4	24.7	23.9	21.7	20.9	20.7	22.6	21.9
Summer	INDU_OTH		12.3	13.9	14.4	14.2	12.0	12.1	12.9	13.7	30.0	16.7	21.9	22.6	23.5	24.6	22.9	28.5	28.4	27.0	25.1	24.4	22.7	13.1	18.1	12.3	19.5
Summer	NONBUILD		22.0	20.5	20.5	21.2	24.1	9.4	9.1	13.4	22.5	25.3	21.6	22.6	22.9	22.7	22.1	11.4	23.3	23.6	12.3	23.4	21.9	21.6	22.0	22.7	20.1
Summer	NONFOODR		21.1	22.6	20.6	21.8	22.1	17.8	17.0	17.0	16.7	17.3	19.8	20.3	21.9	23.4	23.8	24.0	25.8	25.7	25.3	24.3	21.9	24.0	22.6	22.3	21.6
Summer	NURSHOME		13.9	14.3	14.1	14.7	14.1	10.4	10.7	12.9	13.6	14.2	11.4	13.2	28.9	13.8	11.3	26.4	28.2	27.8	26.4	13.2	13.2	13.0	11.2	13.0	16.0
Summer	OFFICES		10.7	10.6	10.0	10.2	29.7	9.0	10.1	10.7	21.6	29.8	23.7	22.1	24.3	29.4	25.3	24.2	28.4	27.5	27.3	27.4	25.2	24.1	22.5	10.8	20.6
Summer	RESAPRCE		15.5	15.1	15.7	14.8	13.8	14.5	14.1	15.1	15.8	18.0	17.5	16.9	18.9	17.2	17.0	18.0	17.1	17.1	19.5	18.8	19.7	17.9	16.3	15.0	16.6
Summer	RESROWE		15.4	15.2	15.0	14.6	14.6	14.0	14.1	15.6	15.2	18.3	17.1	18.0	18.8	18.3	13.3	16.3	16.5	16.1	16.1	17.1	16.8	16.0	16.1	15.9	16.0
Summer	RESSFDE		14.3	12.5	11.3	12.7	12.8	13.6	13.7	15.3	15.7	16.2	17.1	18.5	18.1	18.6	16.2	16.4	12.3	19.5	19.7	20.1	12.2	15.3	13.1	14.4	15.4
Summer	RESSFDNE		10.8	11.3	12.6	11.1	12.5	13.1	12.5	13.1	14.1	12.4	12.7	12.7	13.5	13.7	28.1	12.7	28.5	10.1	15.2	14.7	14.8	14.1	13.4	11.2	14.1
Summer	RSTAURNT		19.9	21.9	21.1	21.9	21.1	21.6	18.8	12.6	11.8	29.6	23.4	19.2	21.1	23.4	24.6	24.1	26.0	25.9	23.3	22.9	22.4	21.8	17.2	17.5	21.4
Summer	SCHOOL		16.3	15.3	15.7	16.3	14.2	14.0	13.9	15.2	16.4	18.1	18.0	15.7	20.3	21.0	20.9	21.6	21.4	22.0	21.1	19.9	18.0	16.5	16.8	17.2	17.7
Summer	TRANPORT		14.3	13.7	14.1	14.0	10.5	10.7	13.0	15.8	12.5	13.1	15.7	20.7	12.0	19.6	17.6	21.1	22.2	15.8	15.9	16.5	16.4	16.5	15.2	14.2	15.5
Summer	UNIVRSTY		12.5	10.2	12.4	11.7	12.1	12.9	18.9	12.2	20.7	12.6	21.6	21.9	10.7	26.1	11.2	12.8	27.6	25.6	27.3	24.2	23.6	12.4	12.3	11.0	16.9
Summer	WAREHSEC		15.9	15.4	15.5	15.0	14.6	13.3	14.3	14.5	10.5	15.2	16.8	17.6	19.2	20.2	20.0	20.7	20.6	21.3	20.7	19.6	19.4	10.3	10.4	10.0	16.3
Winter	CHEMPROD		10.7	11.5	9.9	10.2	8.9	10.7	5.0	8.0	10.4	9.3	24.1	9.7	10.6	17.6	11.2	12.0	11.9	11.8	12.9	11.5	12.0	9.9	12.1	12.0	11.4
Winter	COMM_OTH		5.7	5.3	5.0	5.3	5.0	5.0	5.1	5.4	7.2	13.2	22.4	14.2	12.7	20.7	13.7	13.6	12.5	8.3	6.9	5.0	5.3	5.4	5.5	5.2	8.9
Winter	FOODRETAL		11.4	10.2	9.7	10.5	9.2	6.6	6.4	10.6	10.0	12.0	17.6	9.4	11.6	14.1	12.6	13.7	12.6	7.1	7.2	13.3	12.8	10.4	10.9	9.9	10.8
Winter	HOSPITAL		7.6	5.0	5.0	5.0	10.7	5.0	5.0	5.0	5.0	5.4	16.2	6.0	5.6	6.1	6.7	8.4	6.9	14.7	11.0	11.4	10.8	12.2	7.4	6.8	7.9
Winter	HOTELS		5.0	5.0	5.0	5.0	5.0	5.0	5.0	11.2	5.0	5.0	5.4	5.7	5.6	5.3	5.1	6.1	7.0	6.2	6.0	6.1	6.0	6.0	5.7	5.0	5.7
Winter	INDU_OTH		7.0	7.7	8.8	7.7	11.4	10.4	11.7	5.0	5.0	6.5	26.9	6.8	7.1	7.3	6.9	5.7	5.0	5.0	14.3	5.0	5.7	5.0	7.1	5.3	8.1
Winter	NONBUILD		6.0	5.1	5.0	5.9	5.0	5.0	5.0	5.0	5.0	5.0	6.6	8.6	10.4	10.4	9.6	10.7	9.9	9.3	8.2	7.8	7.4	6.8	7.3	6.5	7.1
Winter	NONFOODR		6.2	6.5	6.2	6.5	5.0	6.3	5.8	11.6	5.4	11.5	9.2	9.0	6.9	7.1	7.7	8.1	6.7	12.4	10.1	9.8	7.6	7.9	7.1	5.0	7.7
Winter	NURSHOME		9.3	8.9	8.5	8.4	7.8	7.7	6.1	8.6	8.2	8.3	10.0	13.2	11.4	11.0	10.6	11.4	10.5	10.2	9.4	9.2	9.7	9.9	10.0	8.9	9.5
Winter	OFFICES		10.6	9.5	8.9	8.2	8.0	7.5	10.3	12.7	5.4	10.9	9.7	11.3	11.6	10.5	12.6	12.9	8.1	5.0	11.3	10.2	9.1	11.3	10.3	9.9	9.8
Winter	RESAPRCE		7.1	7.7	6.4	6.5	7.0	6.2	6.2	8.8	9.5	11.5	10.3	10.0	10.7	10.8	10.3	10.9	10.4	9.4	9.1	7.9	9.7	7.9	8.7	7.3	8.8
Winter	RESROWE		12.2	11.8	11.3	11.7	12.7	12.9	13.4	13.6	12.8	13.3	27.5	14.3	12.3	18.5	14.7	13.8	13.6	14.5	13.8	16.1	15.8	12.4	12.4	14.5	14.2
Winter	RESSFDE		10.5	9.2	6.3	5.4	7.2	8.8	14.1	14.2	14.2	14.0	23.6	14.2	14.2	20.7	14.8	14.6	14.5	15.0	14.3	14.9	16.1	12.6	14.1	14.7	13.4
Winter	RESSFDNE		8.5	7.8	6.6	7.1	7.3	5.2	5.0	5.9	5.0	5.9	6.1	8.5	9.2	9.5	9.4	9.0	8.8	8.4	8.5	7.9	8.8	8.3	9.5	8.3	7.7
Winter	RSTAURNT		5.7	5.0	5.0	5.0	5.0	5.0	6.3	5.0		9.9	8.2	9.6	12.7	9.1	12.5	10.8	13.5	13.9	6.2	5.2	5.0	7.2	6.0	5.4	7.7
Winter	SCHOOL		7.4	7.0	6.5	5.3	5.7	5.0	5.0	11.3	14.1	7.0	18.6	6.0	5.0	5.3	5.0	10.5	13.5	12.6	10.9	14.3	5.4	5.0	7.7	9.0	8.5
Winter	TRANPORT		11.6	11.3	10.9	11.5	12.0	11.4	12.0	13.7	12.7	11.5	13.0	11.6	12.5	11.2	10.6	11.6	13.3	12.4	10.7	15.8	13.2	11.5	10.5	11.5	12.0
Winter	UNIVRSTY		5.0	5.0	12.7	8.8		8.4			8.1	5.0	5.0	6.2	5.1	6.5	5.8	5.0	5.2	5.0	10.3	5.0	5.0	5.2	7.2	6.0	6.5
Winter	WAREHSEC																5.0	5.0	5.0	5.0	5.0	5.0	5.0			5.0	5.0
All	System		13.9	13.7	13.7	13.6	13.8	14.2	16.2	18.3	16.3	15.4	15.1	15.1	14.9	14.9	14.7	14.6	14.7	14.8	15.6	16.5	16.2	15.0	14.3	14.0	15.0
Shoulder	System		11.9	12.6	12.3	12.2	13.1	13.1	15.2	16.1	15.0	14.2	14.0	13.5	13.4	13.6	13.4	14.1	14.7	15.1	15.4	14.7	13.8	12.9	12.8	12.2	13.7
Summer	System		11.1	10.4	9.0	9.4	9.7	10.1	11.5	12.8	12.8	13.3	10.6	11.3	13.1	30.0	13.8	28.9	28.5	28.1	12.6	19.2	13.4	13.1	11.3	11.0	14.8
Winter	System		9.9	10.6	10.4	13.4	11.0	11.2	14.3	14.3	14.3	14.1	16.0	14.4	14.2	13.3	12.5	11.9	12.3	11.0	10.4	11.4	13.3	12.5	11.1	9.6	12.4

Balance Point Temperatures in the steady-state

ASHRAE (2005, p. 32.18) noted that energy gains and losses must be averaged over hourly or daily intervals for balance point temperature (BPT) values to be meaningful. Peak energy gains and losses should not be used for BPT calculations.

The implication is that hourly BPT values should be used with caution. They will be valid if outdoor air temperature is increasing or decreasing gradually, but more rapid changes such as during storms may generate non-representative BPT values.

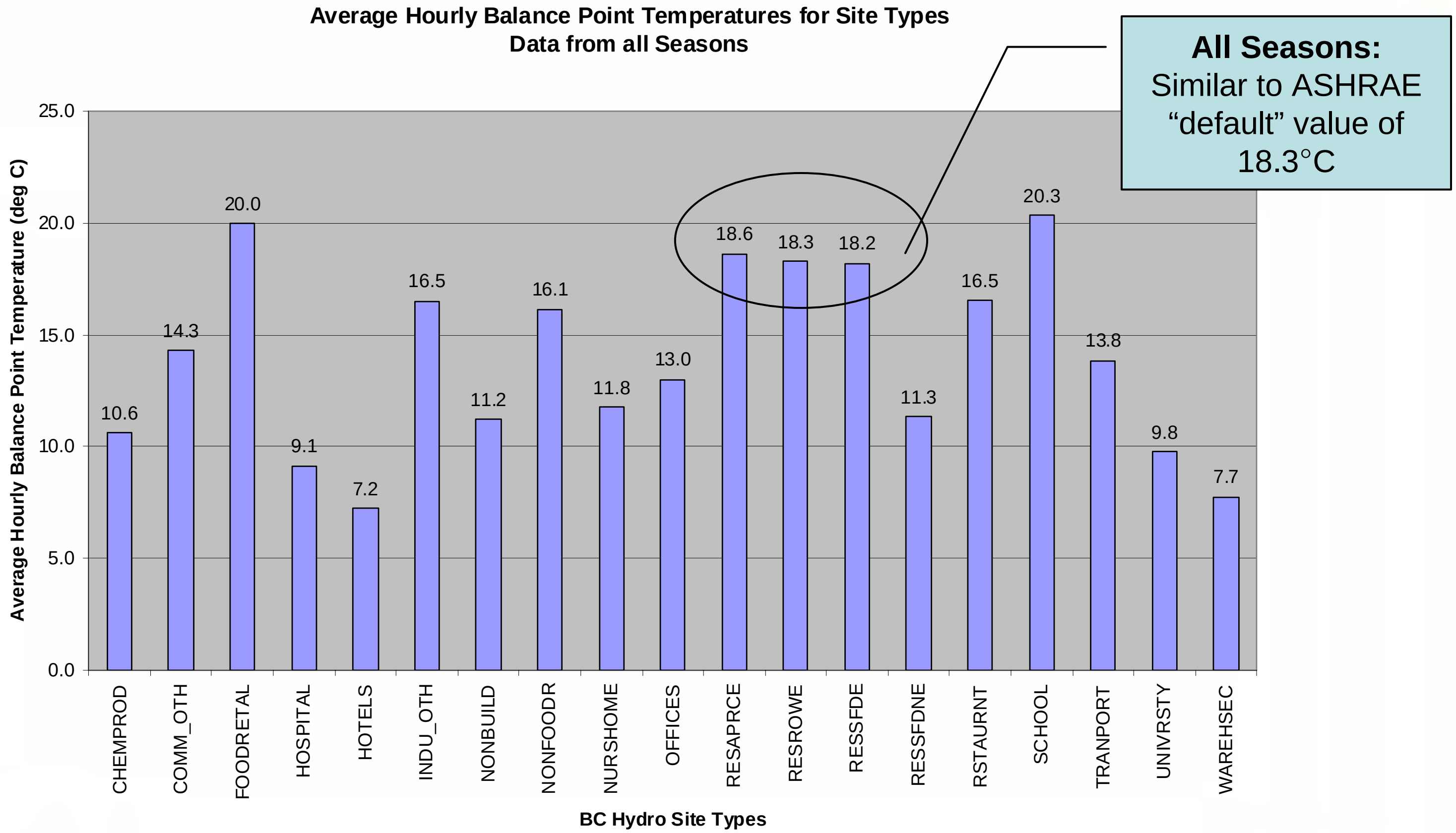
Results from 3-year data sets

For the BC Hydro System, balance point temperatures for the seasons are shown in the Table at right. All are lower than the 18.3°C value often used for energy analyses of North American buildings. The low balance point temperature in winter relative to summer may reflect the fact that during colder weather, most buildings in BC are operated with doors and windows closed. Also, for intermittently occupied buildings, balance point temperatures tend to float with the outdoor air temperature.

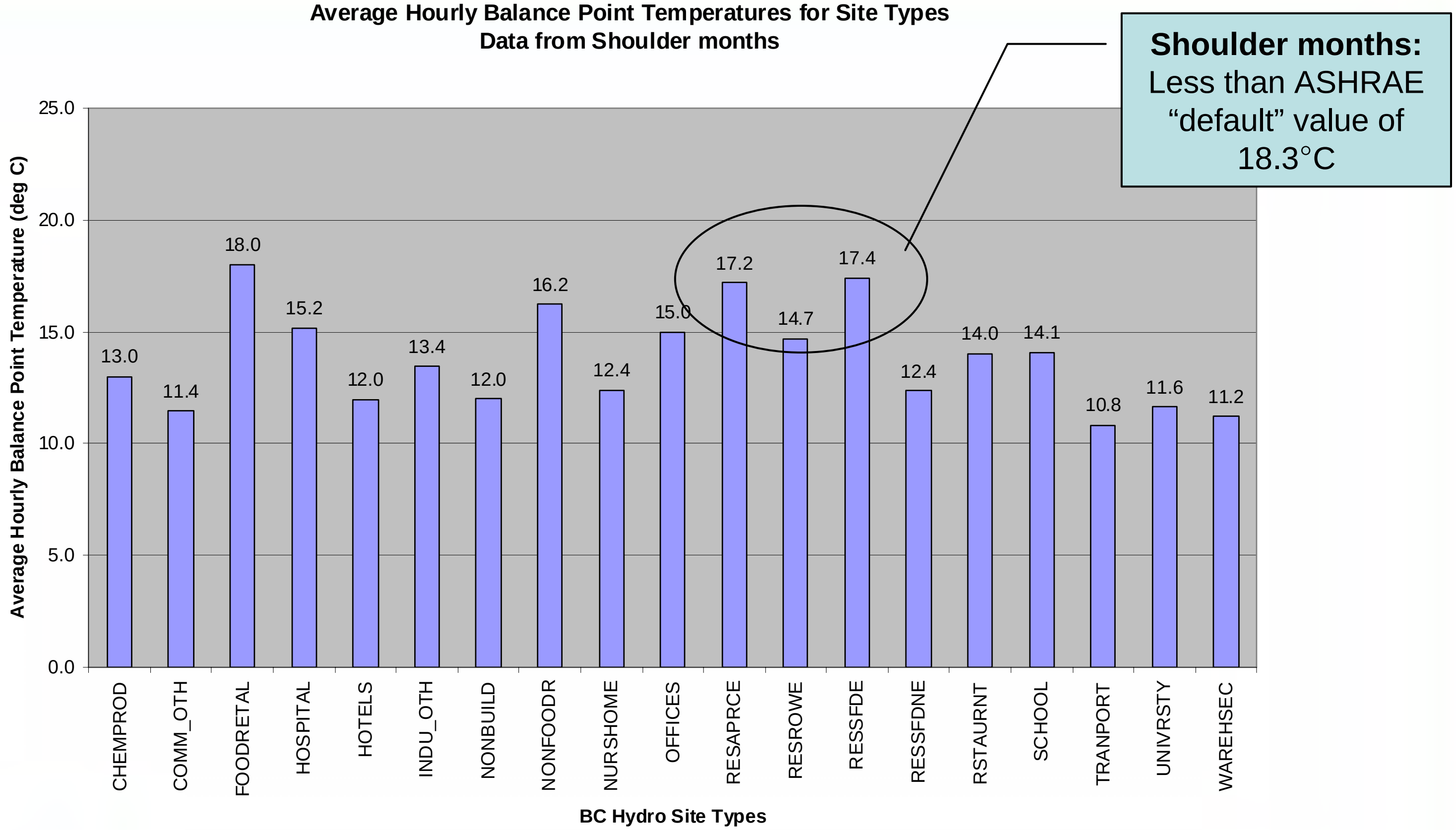
Results from site type analyses

When individual site types were analysed, all season average hourly BPTs for electrically-heated residences were found to be in the 18°C range. These BPTs, season by season, were less than 18°C (see following slides). .

Season	BC Hydro System Steady-state Balance Point Temperature (°C)
All	15.0
Shoulder	13.7
Summer	14.8
Winter	12.4

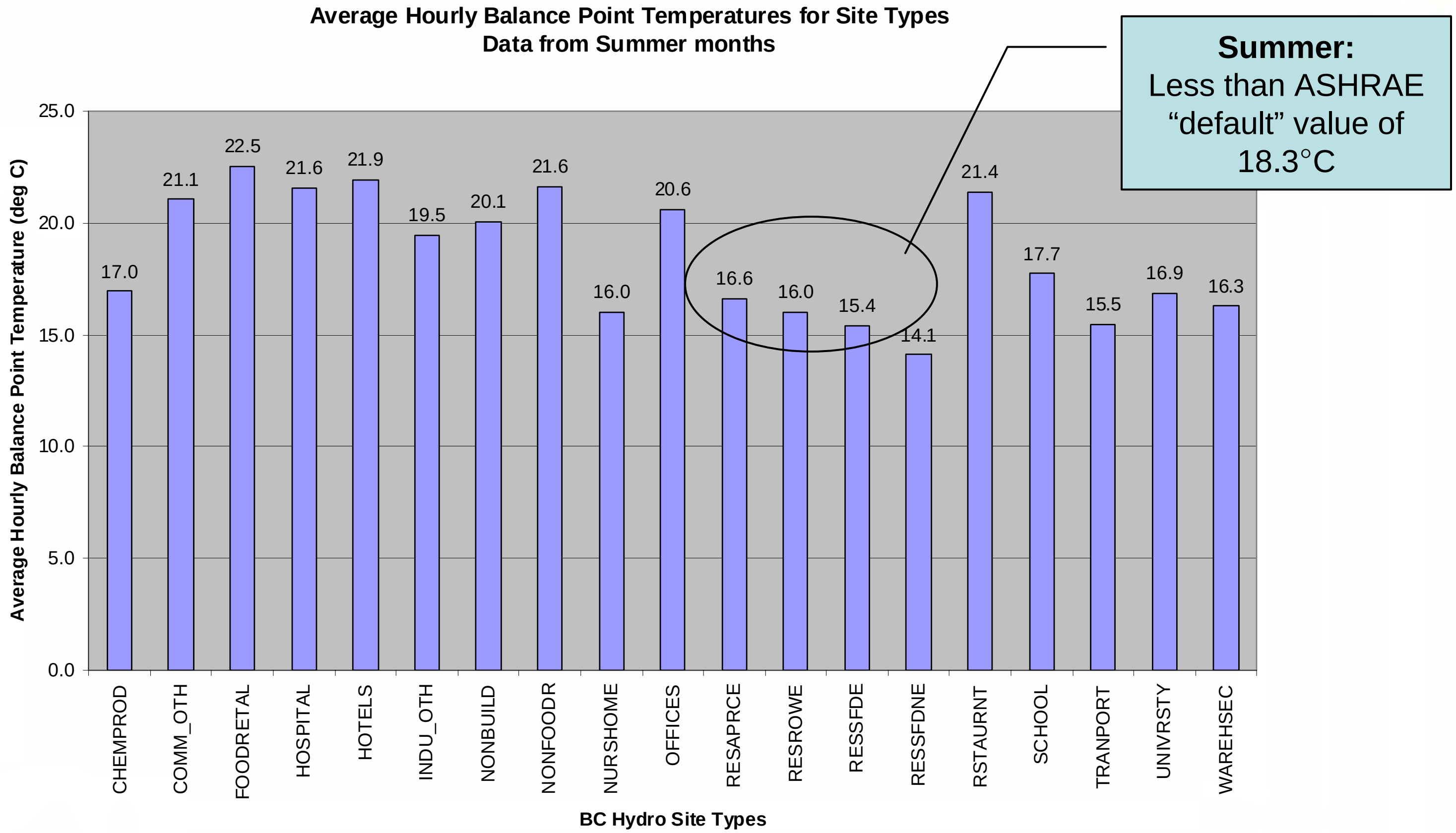

Average Hourly Balance Point Temperatures for Site Types
Data from all Seasons
Average Hourly Balance Point Temperature (deg C)
25.0
20.0
15.0
10.0
5.0
0.0
10.6
14.3
20.0
9.1
7.2
16.5
11.2
16.1
11.8
13.0
18.6
18.3
18.2
11.3
16.5
20.3
13.8
9.8
7.7
CHEMPROD
COMM_OTH
FOODRETAL
HOSPITAL
HOTELS
INDU_OTH
NONBUILD
NONFOODR
NURSHOME
OFFICES
RESAPRCE
RESROWE
RESSFDE
RESSFDNE
RSTAURNT
SCHOOL
TRANPORT
UNIVRSTY
WAREHSEC
BC Hydro Site Types
All Seasons:
Similar to ASHRAE
“default” value of
18.3°C

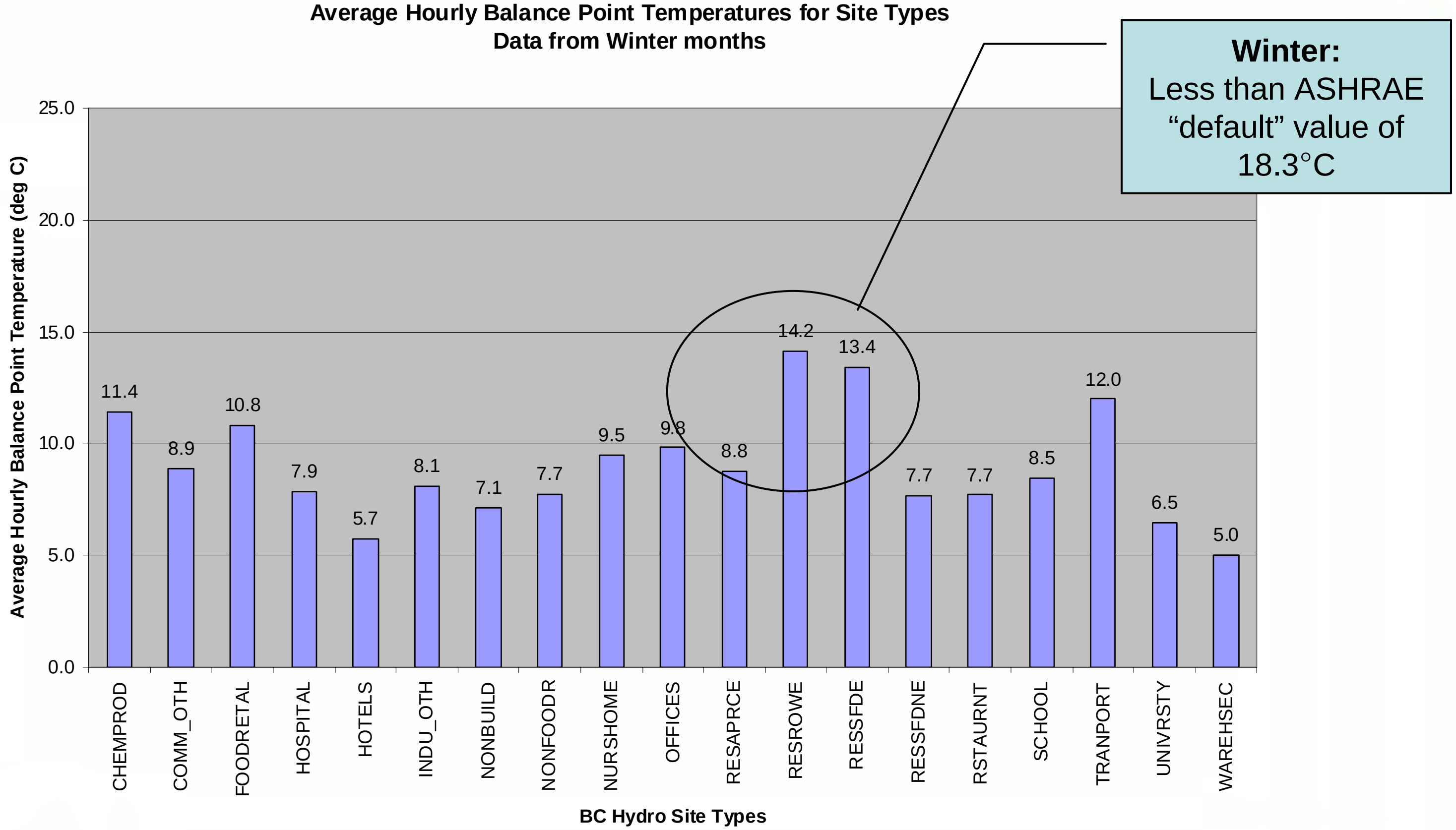
Average Hourly Balance Point Temperatures for Site Types
Data from Shoulder months



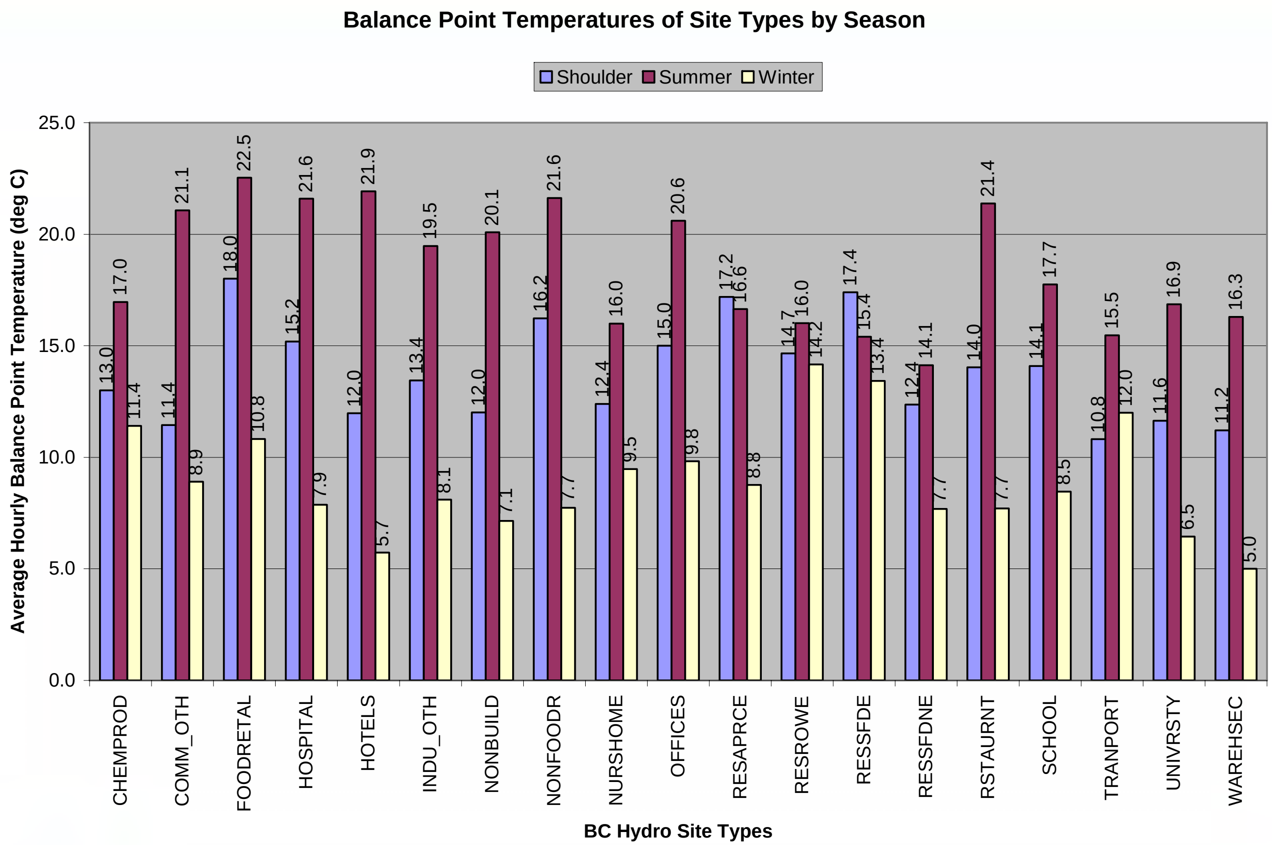
BC hydro FOR GENERATIONS

Roland V Wahlgren, Load Research Analyst
BC Hydro Customer Information Management—Load Analysis


Average Hourly Balance Point Temperatures for Site Types
Data from Summer months
Average Hourly Balance Point Temperature (deg C)
25.0
20.0
15.0
10.0
5.0
0.0
17.0
21.1
22.5
21.6
21.9
19.5
20.1
21.6
16.0
20.6
16.6
16.0
15.4
14.1
21.4
17.7
15.5
16.9
16.3
CHEMPROD
COMM_OTH
FOODRETAL
HOSPITAL
HOTELS
INDU_OTH
NONBUILD
NONFOODR
NURSHOME
OFFICES
RESAPRCE
RESROWE
RESSFDE
RESSFDNE
RSTAURNT
SCHOOL
TRANPORT
UNIVRSTY
WAREHSEC
BC Hydro Site Types
Summer:
Less than ASHRAE "default" value of 18.3°C



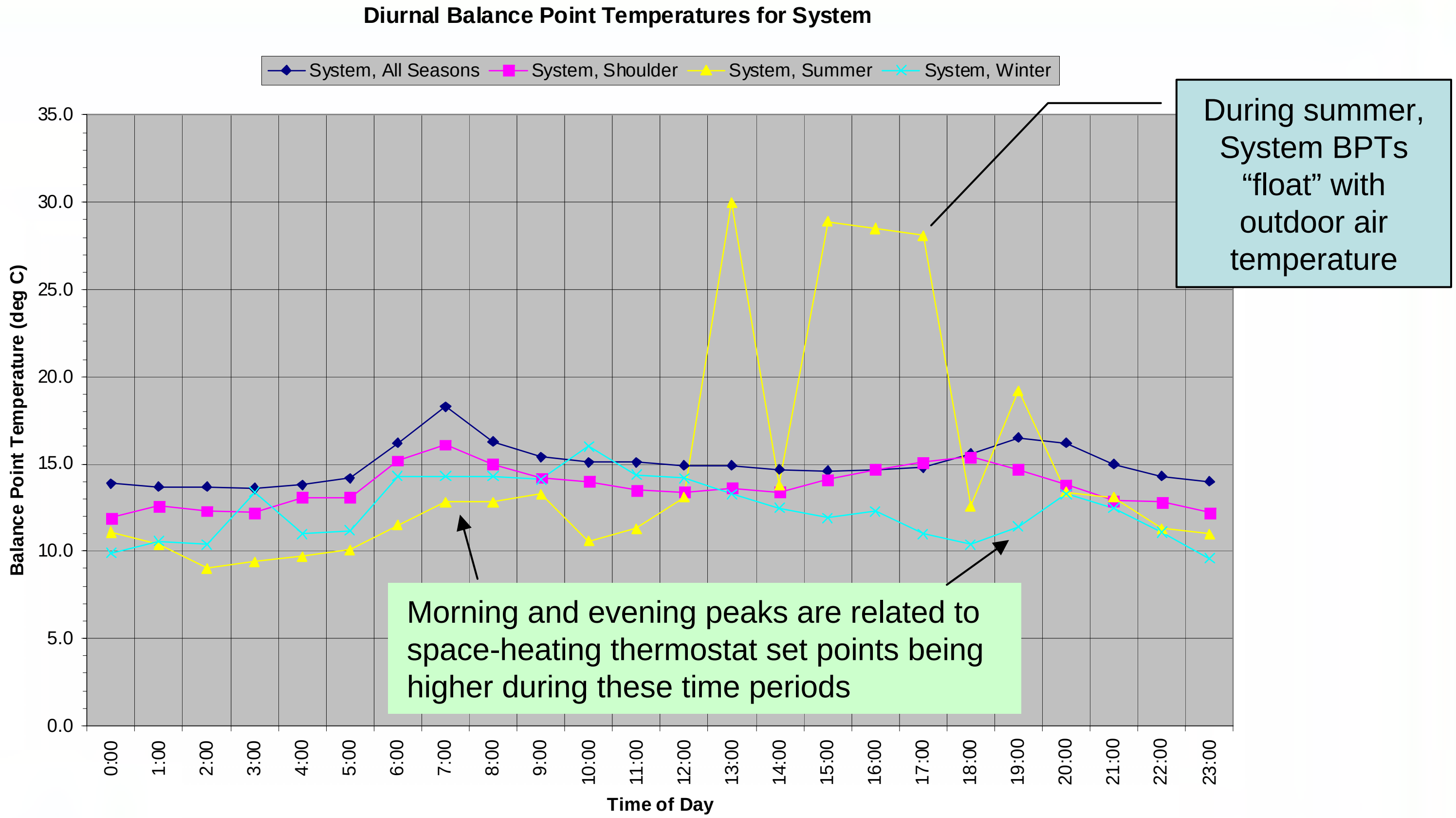
BC hydro FOR GENERATIONS



BPTs are lowest in Winter, highest in Summer, and intermediate in the Shoulder Season months.

Most site types refer to intermittently occupied buildings. Therefore BPTs will float with outdoor temperatures.

During Winter, buildings are likely to have less infiltration because doors and windows are kept closed.



Diurnal Balance Point Temperatures for System
System, All Seasons
System, Shoulder
System, Summer
System, Winter
35.0
30.0
25.0
20.0
15.0
10.0
5.0
0.0
Balance Point Temperature (deg C)
0:00
1:00
2:00
3:00
4:00
5:00
6:00
7:00
8:00
9:00
10:00
11:00
12:00
13:00
14:00
15:00
16:00
17:00
18:00
19:00
20:00
21:00
22:00
23:00
Time of Day
During summer, System BPTs "float" with outdoor air temperature
Morning and evening peaks are related to space-heating thermostat set points being higher during these time periods

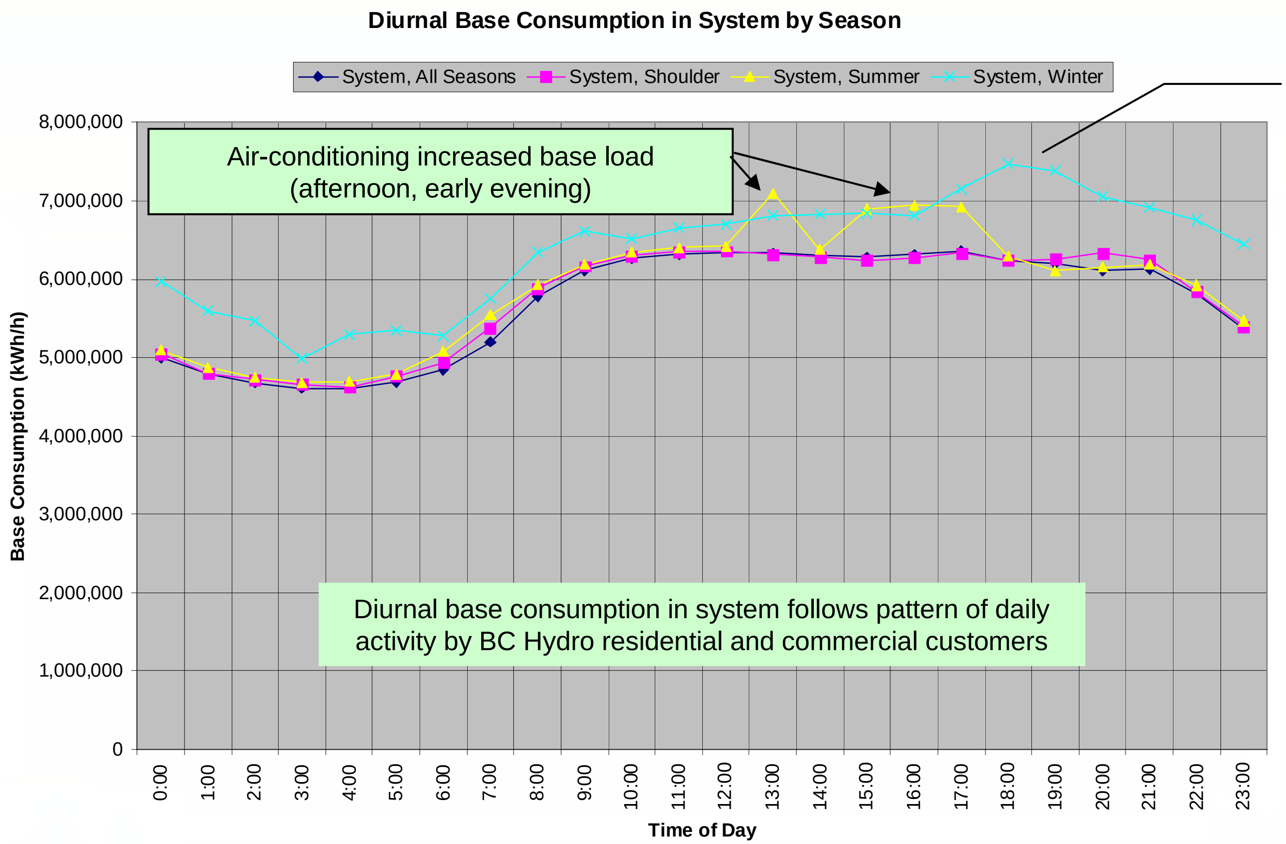
Base Consumption (kWh/h) Summary Table

Season	Shape	Label for chart	_0_00_00	_1_00_00	_2_00_00	_3_00_00	_4_00_00	_5_00_00	_6_00_00	_7_00_00	_8_00_00	_9_00_00	_10_00_00	_11_00_00	_12_00_00	_13_00_00	_14_00_00	_15_00_00	_16_00_00	_17_00_00	_18_00_00	_19_00_00	_20_00_00	_21_00_00	_22_00_00	_23_00_00	
F06-F09	Site Type	Time of Day	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	Average Hourly BC
All	CHEMPROD		29,858	29,362	29,220	28,976	28,904	29,121	30,086	32,235	34,717	35,301	35,751	36,019	35,875	35,894	35,486	34,071	33,026	31,424	29,889	29,943	30,863	30,912	30,751	30,622	32,013
All	COMM_OTH		86,131	80,742	78,987	76,369	78,696	79,677	81,676	86,509	95,093	103,578	111,871	116,280	119,010	120,471	121,150	120,001	119,810	115,699	112,165	113,168	115,720	114,210	105,049	95,539	101,983
All	FOODRETAL		112,224	97,478	94,135	94,590	102,629	97,770	106,062	111,868	117,491	123,591	129,875	132,502	137,501	144,186	142,982	137,471	140,708	142,997	128,362	129,496	119,916	114,172	106,119	102,738	119,453
All	HOSPITAL		48,385	47,931	47,540	47,276	47,452	49,086	54,200	65,398	72,209	78,683	81,038	81,531	79,596	80,148	79,395	77,765	75,297	69,989	67,292	64,118	60,111	55,438	52,332	49,902	63,838
All	HOTELS		80,520	74,781	68,768	67,856	66,307	66,426	71,467	76,820	79,602	82,032	80,975	79,621	79,269	78,880	77,799	76,819	78,099	79,593	81,927	83,248	84,706	85,967	86,860	85,708	78,085
All	INDU_OTH		219,120	212,765	203,148	191,527	151,732	165,124	241,940	313,873	353,169	369,423	308,919	369,812	364,587	361,752	355,452	329,460	301,820	279,637	265,272	252,311	226,679	234,273	232,461	224,123	272,016
All	NONBUILD		56,257	55,868	55,764	55,838	55,970	56,133	57,096	58,889	59,937	60,892	60,919	61,039	61,172	61,327	61,734	61,572	61,210	59,624	59,166	58,840	58,596	58,488	57,883	56,950	58,799
All	NONFOODR		159,673	155,974	154,792	154,071	157,788	168,523	189,660	281,874	408,810	475,478	491,314	435,118	504,221	498,380	475,111	456,999	464,032	326,780	280,655	253,514	242,952	213,663	187,009	170,358	304,448
All	NURSHOME		18,541	18,293	18,180	18,254	18,365	19,432	22,682	25,421	29,067	30,264	31,992	31,399	31,058	32,294	31,669	30,103	29,444	28,179	28,522	26,184	23,833	22,211	20,338	19,126	25,202
All	OFFICES		270,659	263,716	261,167	260,835	263,856	273,956	308,407	359,515	411,704	449,340	470,855	483,423	489,015	606,238	564,261	593,791	475,065	429,186	379,439	353,421	336,614	318,957	299,759	284,445	383,651
All	RESAPRCE		41,773	38,197	36,003	33,761	31,240	10,988	29,605	35,104	25,923	42,680	45,817	47,198	48,304	48,678	48,119	48,048	49,939	52,104	52,614	52,930	52,518	52,843	48,580	44,797	42,407
All	RESROWE		48,838	44,164	38,448	36,511	7,332	31,027	43,350	45,441	58,285	70,186	74,071	72,424	71,230	69,192	68,336	68,818	71,904	76,630	76,958	76,143	73,889	73,122	65,619	56,129	59,085
All	RESSFDE		148,952	126,776	122,993	112,231	101,788	87,510	9,967	55,752	-330,052	-104,322	240,200	241,994	247,006	236,161	228,284	229,020	254,189	295,015	289,905	280,037	277,632	275,165	240,520	189,453	160,674
All	RESSFDNE		627,062	545,430	516,420	499,916	490,919	517,105	606,535	719,748	797,270	832,816	853,335	858,148	864,211	849,960	841,187	863,312	945,269	1,055,853	1,039,278	1,004,796	1,021,523	1,033,042	936,065	773,637	795,535
All	RSTAURNT		71,506	64,634	61,147	60,055	59,844	89,134	78,594	99,270	127,483	140,631	153,408	144,738	160,306	169,978	152,157	159,260	157,977	163,430	158,994	136,599	131,571	120,575	102,902	84,713	118,704
All	SCHOOL		29,475	28,892	28,430	28,115	27,092	21,172	26,472	27,780	76,089	88,357	12,359	49,874	47,611	41,366	43,599	45,436	34,647	19,971	27,185	27,047	14,530	15,831	29,052	29,900	34,178
All	TRANPORT		60,095	56,286	55,315	55,977	56,442	60,822	63,792	60,059	64,009	63,957	62,263	62,570	63,384	63,409	62,671	63,487	63,292	63,274	60,982	58,976	60,612	63,547	63,059	61,716	61,250
All	UNIVRSTY		18,332	17,934	17,606	17,441	17,495	19,350	22,551	26,835	30,929	33,449	35,010	35,958	36,412	36,471	36,489	35,813	34,081	31,501	29,767	28,720	28,106	25,560	22,016	19,551	27,391
All	WAREHSEC		5,221	5,086	5,181	5,051	5,021	5,212	5,062	5,046	5,065	5,320	5,269	5,403	5,548	5,827	5,917	5,966	5,919	5,892	5,737	5,679	5,584	5,357	5,286	5,501	5,423
Shoulder	CHEMPROD		31,193	31,065	30,981	30,742	30,694	30,811	31,625	32,828	34,940	35,462	35,954	36,298	36,615	36,517	36,391	35,037	33,825	32,490	30,774	30,881	32,163	32,229	31,879	31,915	33,054
Shoulder	COMM_OTH		88,660	83,657	81,007	79,008	79,922	82,423	88,017	88,572	95,780	106,128	115,056	119,354	120,885	120,863	122,839	119,561	119,074	115,739	114,377	119,012	123,823	119,543	108,844	97,919	104,586
Shoulder	FOODRETAL		104,321	97,093	92,886	93,826	95,373	95,048	104,324	109,643	114,024	118,257	128,141	132,791	136,539	138,928	139,691	124,531	139,879	121,460	135,077	129,781	124,505	118,056	105,051	102,463	116,737
Shoulder	HOSPITAL		53,250	46,623	46,528	46,226	46,692	48,207	53,041	64,772	71,778	76,727	78,425	78,726	89,629	86,972	87,038	85,758	85,463	78,364	75,268	69,789	58,174	53,420	50,284	48,170	65,805
Shoulder	HOTELS		69,785	65,038	61,189	59,644	58,436	60,500	65,212	66,868	69,511	73,799	73,856	72,870	72,613	72,186	70,879	70,747	71,813	72,568	74,062	76,040	78,047	81,358	77,907	74,796	70,405
Shoulder	INDU_OTH		226,353	226,825	224,796	221,714	222,048	230,722	279,490	326,024	354,153	374,312	370,903	369,506	364,136	363,844	361,734	341,419	303,552	281,060	266,519	261,771	254,094	252,253	237,970	228,491	289,320
Shoulder	NONBUILD		55,320	54,563	54,800	55,070	55,390	55,541	56,731	58,634	60,019	60,772	61,013	63,498	60,783	60,702	60,852	65,234	69,038	66,274	67,338	57,713	57,283	57,128	56,557	55,749	59,417
Shoulder	NONFOODR		153,825	151,158	150,137	149,959	153,540	164,760	186,905	228,674	269,749	318,947	425,109	442,521	459,857	478,183	473,397	475,065	447,841	418,973	354,401	242,508	285,757	205,067	178,760	162,814	290,746
Shoulder	NURSHOME		18,383	18,475	18,366	18,634	18,326	19,345	22,781	25,489	28,413	29,982	31,606	31,272	30,730	31,688	31,155	29,384	28,354	26,945	27,253	25,445	23,496	21,691	19,586	18,896	24,820
Shoulder	OFFICES		270,955	264,140	263,848	263,697	263,575	274,259	310,443	357,447	406,642	441,881	461,706	553,263	576,287	482,893	483,219	593,808	563,981	513,904	474,907	347,058	332,413	316,276	297,266	282,673	391,523
Shoulder	RESAPRCE		39,280	38,628	36,919	35,035	36,920	35,581	38,626	42,847	39,812	40,598	48,272	50,858	50,632	49,803	49,257	49,617	51,749	55,386	54,908	56,808	57,358	55,228	48,690	45,791	46,192
Shoulder	RESROWE		55,215	54,853	53,651	53,074	52,313	51,096	60,877	71,443	74,669	81,586	82,608	78,679	73,594	70,372	70,726	70,982	76,060	82,098	81,850	80,988	79,265	76,488	69,556	62,352	69,350
Shoulder	RESSFDE		154,249	78,173	87,822	63,182	80,472	80,068	113,395	152,344	81,828	101,124	250,454	261,939	256,716	238,773	236,636	247,027	269,567	317,608	305,323	313,049	316,252	313,871	251,433	196,119	198,643
Shoulder	RESSFDNE		604,860	539,594	501,160	494,195	487,346	516,772	617,755	753,202	818,062	824,057	820,432	806,488	815,345	795,339	786,761	797,431	874,279	990,127	997,997	996,413	1,049,058	1,027,453	915,863	744,398	773,933
Shoulder	RSTAURNT		78,271	61,748	59,000	58,285	58,582	61,783	72,558	89,317	97,662	107,529	124,012	140,001	142,955	132,958	131,347	129,624	157,031	136,908	135,200	133,314	150,206	134,732	107,849	88,613	107,895
Shoulder	SCHOOL		33,432	32,984	32,992	33,184	32,256	34,607	43,945	58,944	79,043	104,207	107,079	109,975	112,137	105,613	120,615	98,168	74,540	63,114	60,647	60,523	57,636	52,080	42,966	36,066	66,115
Shoulder	TRANPORT		61,382	58,543	57,719	59,100	57,775	63,070	70,115	67,690	65,796	64,989	63,402	63,298	64,154	63,418	62,823	63,306	62,693	62,599	60,998	61,020	63,667	64,639	63,213	62,483	62,829
Shoulder	UNIVRSTY		18,744	18,576	18,013	17,837	17,842	19,414	23,310	27,524	31,599	34,012	35,367	41,584	43,092	36,594	45,081	42,862	42,719	31,789	30,366	29,642	29,115	26,825	23,103	20,280	29,387
Shoulder	WAREHSEC		5,155	5,076	5,156	4,966	4,942	5,128	5,082	4,989	5,034	5,353	5,351	5,347	5,451	5,841	5,805	5,721	5,748	5,856	5,588	5,502	5,595	5,321	5,132	5,328	5,353
Summer	CHEMPROD		26,672	26,129	25,094	24,466	25,759	26,865	28,459	31,278	33,167	34,139	34,758	35,812	36,205	34,871	34,270	32,820	32,290	29,822	28,213	28,092	28,703	28,597	28,469	28,105	30,127
Summer	COMM_OTH		85,657	86,857	86,484	84,287	85,257	87,178	87,791	90,703	99,214	119,118	114,552	123,498	133,848	140,645	129,016	132,214	131,581	128,631	122,955	115,918	115,354	112,800	111,762	94,978	109,179
Summer	FOODRETAL		104,814	100,324	101,618	100,602	101,469	103,902	113,607	116,941	118,220	131,821	135,210	137,899	142,700	148,299	143,032	143,597	143,816	140,029	135,110	130,787	127,453	111,495	113,125	110,508	123,182
Summer	HOSPITAL		57,468	57,402	55,105	54,667	52,927	54,863	58,258	67,104	75,907	81,134	88,437	88,780	86,679	97,187	83,139	81,214	87,784	82,498	78,985	79,609	70,644	63,894	60,047	59,815	71,814
Summer	HOTELS		136,491	135,278	110,810	99,977	87,355	75,341	77,421	83,786	89,059	92,903	93,906	92,292	93,612	94,856	99,222	97,016	103,555	103,100	101,734	101,634	98,936	102,613	113,439	140,009	101,014
Summer	INDU_OTH		219,997	216,510	211,390	206,808	208,415	221,654	249,401	298,547	253,040	344,240	339,455	344,566	342,479	350,304	342,327	323,129	312,077	286,292	272,932	259,470	244,840	246,945	235,149	225,304	273,136
Summer	NONBUILD		61,304	60,275	60,960	61,640	62,523	56,249	57,004	59,090	63,342	66,784	64,476	64,887	64,911	64,668	64,521	62,844	64,565	63,231	60,593	62,887	62,381	62,922	62,690	62,680	62,393
Summer	NONFOODR		181,381	180,511	170,991	170,255	172,170	181,049	208,982	260,756	308,756	359,901	402,503	413,292	419,378	431,292	433,013	430,090	424,800	386,771	324,703	288,227	265,675	241,629	215,199	197,518	294,535
Summer	NURSHOME		18,306	17,830	17,693	17,510	17,664	19,260	22,088	25,018	28,535	29,720	31,752	31,571	37,432	32,418	31,977	34,339	34,977	33,700	32,793	26,628	24,115	22,574	20,815	19,028	26,156
Summer	OFFICES		273,437	266,069	262,520	262,060	287,516	274,280	307,220	359,718	420,758	535,719	518,527	525,301	536,022	587,011	553,274	548,328	554,985	503,876	451,282	434,299	388,263	364,258	336,891	287,549	409,965
Summer	RESAPRCE		43,465	41,004	39,557	39,532	40,004	39,682	42,034	44,874	46,412	48,098	50,320	50,699	49,489	49,687	48,962	48,730	50,440	52,169	52,484	52,878	52,113	52,873	50,125	46,356	47,166
Summer	RESROWE		57,933	52,494	50,692	50,002	51,387	56,109	60,646	67,851	76,921	81,827	82,262	79,908	77,213	74,580	73,648	73,449	75,947	80,064	81,209	80,627	79,294	79,629	73,468	64,697	70,077
Summer	RESSFDE		175,605	154,111	144,936	141,538	141,271	149,424	199,062	250,243	285,129	307,984	297,815	282,112	271,221	251,546	243,348	241,445	264,108	297,889	300,229	294,246	302,968	299,203	269,815	217,073	240,930
Summer	RESSFDNE		646,994	558,573	521,143	500,594	488,734	501,230	571,045	668,513	775,206	832,668	859,655	874,796	884,186	876,448	1,138,305	892,207	1,281,369	1,060,534	1,050,538	1,001,589	1,004,828	1,031,798	954,826	797,792	823,899
Summer	RSTAURNT		83,140	79,853	75,707	75,766	74,281	80,245	86,978	95,814	104,518	135,627	144,167	144,289	148,724	154,617	155,293	152,343	157,828	161,201	155,372	152,000	147,124	138,523	112,373	93,637	121,226
Summer	SCHOOL		28,983	28,538	27,570	26,946	27,900	28,028	30,806	37,233	45,802	48,716	54,751	63,063	51,505	52,782	53,482	47,931	39,963	32,698	30,518	31,567	32,751	33,805	31,801	29,680	38,201
Summer	TRANPORT		60,988	57,177	55,936	56,453	57,220	61,238	64,066	62,483	65,005	64,671	63,179	63,939	64,217	64,554	63,532	64,795	65,381	64,398	62,095	59,513	60,459	64,489	64,397	62,623	62,200
Summer	UNIVRSTY		18,013	17,381	16,968	16,821	16,856	18,458	22,507	26,604	31,768	32,623	35,879	36,791	35,590	39,442	35,853	35,421	39,126	34,613	33,956	30,877	29,464	25,285	21,930	19,394	27,984
Summer	WAREHSEC		6,127	6,005	5,982	5,930	5,840	5,832	5,868	5,812	5,731	6,049	6,118	6,237	6,451	6,622	6,657	6,804	6,814	6,841	6,690	6,493	6,447	6,038	5,972	6,030	6,224
Winter	CHEMPROD		32,300	32,465	30,516	30,724	29,383	31,241	27,103	29,943	33,020	34,049	47,526	34,140	34,680	39,957	34,412	33,909	32,770	31,994	32,440	31,178	33,058	30,995	34,105	34,083	33,166
Winter	COMM_OTH		112,792	104,637	99,481	96,016	95,369	97,353	102,399	110,441	116,788	115,620	110,505	123,420	134,180	121,809	133,613	134,915	135,144	139,887	141,497	146,089	147,405	141,814	132,149	122,197	121,480
Winter	FOODRETAL		97,663	95,253	93,450	93,743	93,887	94,156	98,152	105,884	110,501	116,115	123,334	118,405	120,574	121,387	120,353	120,647	119,896	117,576	115,295	117,013	114,713	108,367	103,804	99,072	109,135
Winter	HOSPITAL		50,484	50,127	49,871	49,791	47,874	50,910	53,631	61,231	72,009	77,582	74,245	81,896	81,418	79,512	79,156	76,996	75,978	65,197	66,245	63,832	61,433	56,720	55,258	52,612	63,917
Winter	HOTELS		83,462	80,094	77,007	75,181	74,802	75,471	79,084	77,001	88,068	89,978	90,781	90,139	89,189	88,090	87,464	86,553	85,004	87,261	90,272	91,837	92,352	90,771	89,146	87,144	85,256
Winter	INDU_OTH		239,969	242,724	245,333	244,844	233,371	239,423	250,760	292,987	339,657	370,033	360,306	370,455	368,086	360,224	357,601	349,943	332,311	315,222	267,624	282,017	274,142	267,554	257,285	247,782	296,236
Winter	NONBUILD		62,661	63,317	63,160	62,805	63,278	63,765	64,557	66,414	69,344	70,776	70,459	68,950	66,939	67,135	67,612	66,129	65,764	65,303	65,318	65,319	65,474	65,534	63,950	63,695	65,736
Winter	NONFOODR		170,392	163,640	162,191	161,544	164,479	169,387	184,428	201,643	249,463	279,704	322,379	343,742	349,632	346,405	344,433	340,979	336,581	310,079	286,705	256,055	244,459	229,305	203,795	183,949	250,224
Winter	NURSHOME		21,534	21,456	21,620	21,649	22,106	22,572	25,109	27,273	30,653	32,847	32,865	30,936	32,315	32,292	33,123	31,303	30,533	29,838	29,822	29,735	27,345	25,111	23,161	22,532	27,405
Winter	OFFICES		298,109	289,515	290,342	291,174	293,501	300,744	309,709	335,784	405,768	429,031	457,249	469,122	476,150	478,943	477,500	472,708	473,733	459,027	404,157	377,438	364,673	340,325	325,880	312,699	380,720
Winter	RESAPRCE		68,986	65,937	66,071	65,365	64,826	66,393	68,482	68,656	71,116	68,830	73,347	74,381	73,226	72,758	72,777	71,571	73,677	78,886	82,802	85,819	80,822	80,327	75,271	72,670	72,625
Winter	RESROWE		88,917	84,868	83,121	78,485	75,161	74,861	76,732	84,186	98,923	103,432	59,520	97,333	112,550	91,662	101,217	106,336	108,105	107,740	116,181	98,095	92,488	109,535	104,161	78,567	93,007
Winter	RESSFDE		406,449	388,292	421,089	440,936	422,855	405,605	304,663	427,322	520,502	540,356	279,885	454,321	448,771	268,538	381,994	396,435	404,949	455,922	545,741	546,910	470,916	532,780	457,795	374,848	429,078
Winter	RESSFDNE		767,794	664,505	604,930	567,585	559,980	602,104	660,278	762,067	935,262	1,018,285	1,002,497	963,540	962,783	955,369	928,451	936,356	996,046	1,131,184	1,272,323	1,304,438	1,227,637	1,175,132	1,054,684	934,646	916,162
Winter	RSTAURNT		73,738	65,043	60,420	58,788	57,914	59,373	64,910	77,500		99,249	110,765	122,594	125,451	125,721	126,753	122,971	122,766	128,488	135,039	133,544	128,800	118,745	105,241	88,206	100,523
Winter	SCHOOL		44,080	42,615	42,648	42,887	43,068	45,219	50,487	54,289	62,873	94,286	89,496	107,862	107,204	105,297	103,796	95,634	78,742	69,219	67,030	59,443	69,726	65,734	57,437	48,128	68,633
Winter	TRANPORT		65,370	63,236	60,739	60,473	61,182	61,887	66,456	70,093	72,222	72,544	70,469	68,650	66,137	69,035	71,410	68,251	65,344	68,502	75,514	64,370	67,068	69,298	69,771	65,977	67,250
Winter	UNIVRSTY		21,532	20,259	19,149	19,124		19,642			29,756	33,810	35,421	36,495	36,939	36,902	36,708	36,380	35,371	34,258	32,062	32,142	31,673	30,377	27,447	23,971	29,972
Winter	WAREHSEC																4,901	4,966	5,032	4,983	4,870	4,718	4,720			4,636	4,853
All	System		5,003,507	4,792,168	4,674,528	4,606,488	4,607,219	4,689,771	4,846,871	5,201,103	5,781,541	6,112,045	6,268,032	6,318,110	6,346,006	6,334,555	6,308,571	6,283,026	6,319,977	6,363,814	6,237,566	6,199,181	6,116,457	6,125,389	5,822,296	5,372,964	5,697,133
Shoulder	System		5,047,476	4,800,075	4,717,660	4,659,679	4,619,891	4,766,672	4,939,685	5,377,475	5,879,029	6,166,433	6,297,397	6,351,118	6,357,384	6,318,181	6,286,012	6,239,135	6,276,981	6,333,731	6,244,451	6,259,826	6,333,990	6,245,882	5,844,142	5,399,289	5,740,066
Summer	System		5,094,868	4,872,371	4,749,215	4,687,237	4,694,862	4,788,030	5,078,693	5,549,907	5,929,394	6,191,504	6,345,598	6,404,064	6,425,082	7,097,459	6,383,624	6,896,997	6,943,984	6,926,533	6,293,230	6,108,794	6,149,611	6,186,234	5,923,018	5,471,631	5,882,998
Winter	System		5,974,276	5,597,760	5,462,463	4,990,322	5,296,217	5,348,973	5,274,538	5,756,843	6,347,471	6,617,271	6,516,269	6,654,149	6,699,383	6,815,425	6,833,747	6,837,258	6,812,463	7,150,976	7,471,065	7,388,678	7,057,721	6,916,471	6,758,757	6,450,878	6,376,224

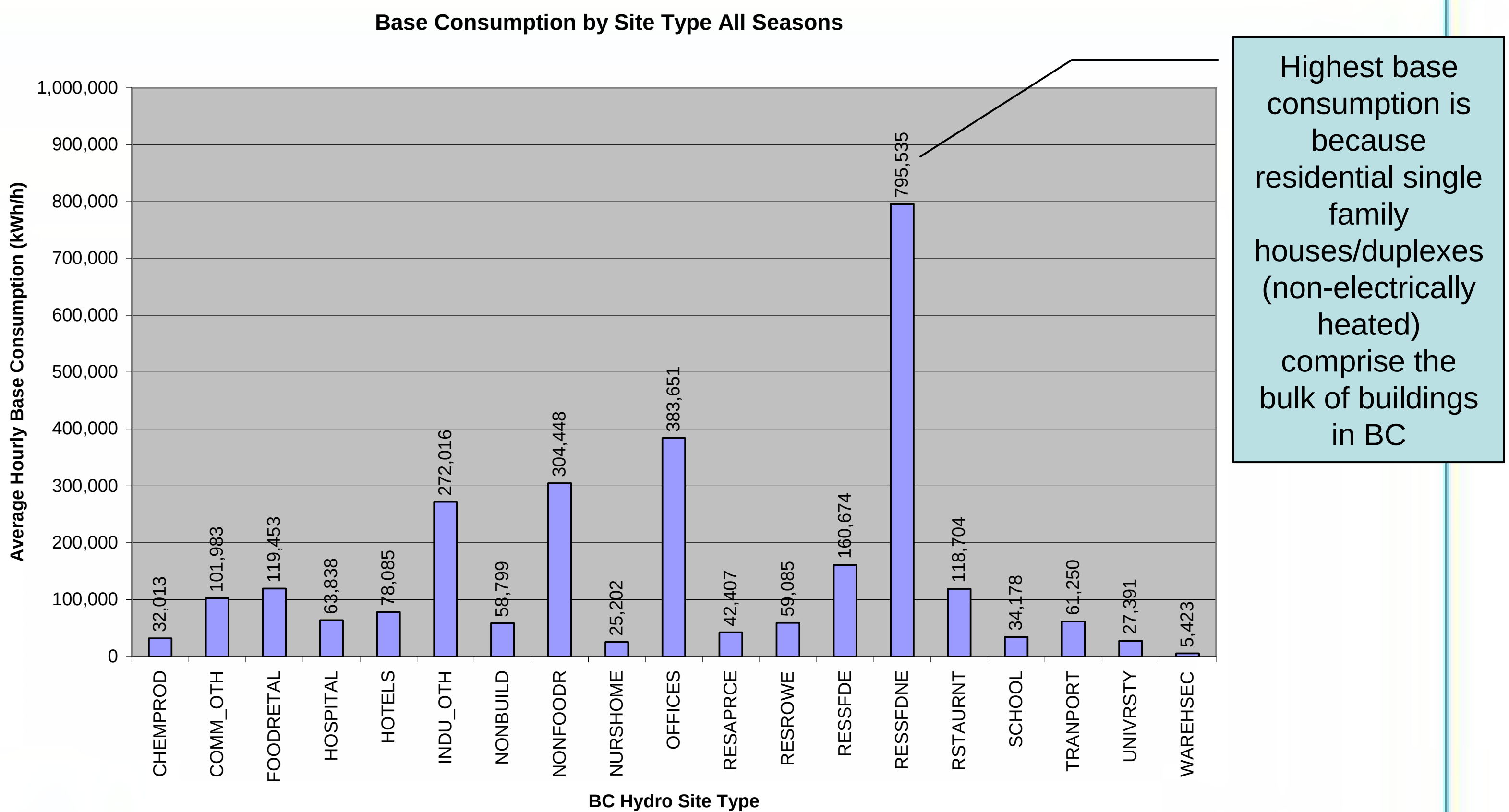
Base Consumption in the steady-state

Base Consumption, unlike Balance Point Temperature and Weather Sensitivity, cannot be aggregated meaningfully to yield average seasonal values for collections of site types.

This table is the data source for charts showing diurnal and seasonal consumption by site type.



Winter: Electric heaters, ranges, and lighting at "dinner-time"



BC hydro FOR GENERATIONS

Weather Sensitivity [Relative, 1/(K·h)] Summary Table

Season	Shape	Label for chart	_0_00_00	_1_00_00	_2_00_00	_3_00_00	_4_00_00	_5_00_00	_6_00_00	_7_00_00	_8_00_00	_9_00_00	_10_00_00	_11_00_00	_12_00_00	_13_00_00	_14_00_00	_15_00_00	_16_00_00	_17_00_00	_18_00_00	_19_00_00	_20_00_00	_21_00_00	_22_00_00	_23_00_00	
F06-F09	Site Type	Time of Day	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	Average Hourly BPT
All	CHEMPROD		-1.08E-07	-1.05E-07	-1.03E-07	-1.02E-07	-9.92E-08	-9.61E-08	-9.86E-08	-1.05E-07	-1.16E-07	-1.08E-07	-1.14E-07	-1.19E-07	-1.21E-07	-1.25E-07	-1.31E-07	-1.24E-07	-1.31E-07	-1.21E-07	-1.09E-07	-1.20E-07	-1.32E-07	-1.20E-07	-1.16E-07	-1.16E-07	-1.14E-07
All	COMM_OTH		1.04E-07	9.51E-08	8.99E-08	8.67E-08	8.16E-08	7.82E-08	7.58E-08	8.30E-08	8.17E-08	8.00E-08	9.51E-08	1.08E-07	1.14E-07	1.15E-07	1.15E-07	1.16E-07	1.03E-07	1.11E-07	1.06E-07	9.56E-08	9.24E-08	9.51E-08	1.01E-07	1.01E-07	9.68E-08
All	FOODRETAL		-4.94E-08	-3.10E-08	-3.03E-08	-3.07E-08	-3.31E-08	-2.65E-08	-4.16E-08	-3.62E-08	-3.96E-08	-4.36E-08	-4.35E-08	-5.13E-08	-5.66E-08	-6.32E-08	-6.26E-08	-6.62E-08	-6.08E-08	-6.87E-08	-5.81E-08	-6.06E-08	-5.04E-08	-4.38E-08	-3.73E-08	-3.83E-08	-4.68E-08
All	HOSPITAL		3.36E-08	2.97E-08	3.01E-08	2.98E-08	2.88E-08	2.49E-08	5.99E-09	-3.13E-08	1.56E-08	-3.52E-09	3.65E-08	3.45E-08	3.90E-08	2.81E-08	2.56E-08	2.61E-08	2.86E-08	4.67E-08	3.78E-08	3.96E-08	4.62E-08	4.61E-08	3.73E-08	3.46E-08	2.79E-08
All	HOTELS		1.99E-07	1.95E-07	1.99E-07	2.07E-07	2.02E-07	1.92E-07	1.90E-07	1.93E-07	1.89E-07	1.91E-07	1.84E-07	1.88E-07	1.87E-07	1.86E-07	2.00E-07	1.93E-07	1.92E-07	2.07E-07	2.02E-07	1.86E-07	1.81E-07	1.86E-07	1.89E-07	1.93E-07	1.93E-07
All	INDU_OTH		3.53E-08	4.40E-08	5.33E-08	5.76E-08	6.03E-08	5.87E-08	5.46E-08	-1.12E-08	-1.54E-08	4.02E-09	7.63E-08	-9.59E-09	-7.41E-09	-1.16E-08	-7.16E-09	2.05E-08	3.32E-08	4.21E-08	4.45E-08	3.11E-08	3.33E-08	2.87E-08	3.03E-08	3.28E-08	2.83E-08
All	NONBUILD		9.15E-08	8.80E-08	8.83E-08	8.74E-08	8.58E-08	8.30E-08	8.38E-08	8.22E-08	8.90E-08	9.33E-08	9.68E-08	9.94E-08	9.98E-08	9.77E-08	9.96E-08	9.97E-08	1.02E-07	1.06E-07	1.04E-07	1.00E-07	9.67E-08	9.64E-08	9.53E-08	9.20E-08	9.40E-08
All	NONFOODR		4.22E-08	3.63E-08	3.52E-08	3.59E-08	3.50E-08	3.15E-08	4.55E-09	-1.09E-07	-1.68E-07	-1.93E-07	-1.92E-07	-1.52E-07	-1.98E-07	-2.00E-07	-1.91E-07	-1.84E-07	-1.92E-07	4.18E-08	5.63E-08	5.02E-08	5.73E-08	5.69E-08	6.05E-08	5.20E-08	-4.94E-08
All	NURSHOME		1.43E-07	1.43E-07	1.41E-07	1.39E-07	1.38E-07	1.30E-07	1.17E-07	1.13E-07	1.12E-07	1.29E-07	1.20E-07	1.30E-07	1.31E-07	1.14E-07	1.28E-07	1.35E-07	1.32E-07	1.47E-07	1.40E-07	1.53E-07	1.51E-07	1.48E-07	1.47E-07	1.44E-07	1.34E-07
All	OFFICES		5.41E-08	5.33E-08	5.15E-08	5.09E-08	4.81E-08	4.66E-08	3.70E-08	3.34E-08	1.97E-08	-9.46E-09	1.76E-08	8.63E-10	4.22E-09	-1.22E-07	-1.04E-07	-1.24E-07	3.43E-08	5.16E-08	6.07E-08	5.58E-08	5.19E-08	5.37E-08	5.50E-08	5.46E-08	1.98E-08
All	RESAPRCE		1.64E-07	1.64E-07	1.61E-07	1.62E-07	1.64E-07	1.77E-07	1.93E-07	1.91E-07	1.76E-07	1.57E-07	1.53E-07	1.56E-07	1.62E-07	1.64E-07	1.65E-07	1.59E-07	1.60E-07	1.69E-07	1.77E-07	1.80E-07	1.69E-07	1.70E-07	1.69E-07	1.71E-07	1.68E-07
All	RESROWE		1.94E-07	1.90E-07	1.83E-07	1.86E-07	1.91E-07	1.88E-07	2.04E-07	1.90E-07	1.88E-07	1.95E-07	2.03E-07	2.07E-07	2.10E-07	2.08E-07	2.10E-07	2.06E-07	2.13E-07	2.24E-07	2.35E-07	2.30E-07	2.25E-07	2.16E-07	2.12E-07	2.07E-07	2.05E-07
All	RESSFDE	RESSFDE, All Seasons	2.53E-07	2.44E-07	2.47E-07	2.56E-07	2.65E-07	2.68E-07	2.94E-07	3.74E-07	3.88E-07	3.22E-07	3.29E-07	3.23E-07	3.23E-07	3.22E-07	3.02E-07	2.97E-07	2.95E-07	2.99E-07	3.08E-07	3.02E-07	3.01E-07	2.89E-07	2.83E-07	2.71E-07	2.98E-07
All	RESSFDNE	RESSFDNE, All Season	1.42E-07	1.28E-07	1.09E-07	1.05E-07	9.89E-08	1.02E-07	9.30E-08	7.83E-08	8.34E-08	1.15E-07	1.16E-07	1.20E-07	1.25E-07	1.37E-07	1.45E-07	1.42E-07	1.44E-07	1.64E-07	2.01E-07	2.03E-07	1.76E-07	1.74E-07	1.64E-07	1.63E-07	1.35E-07
All	RSTAURNT		2.98E-08	9.77E-09	-1.45E-09	-6.42E-09	-1.60E-08	-9.33E-08	-6.74E-08	-8.06E-08	-9.21E-08	-1.09E-07	-1.04E-07	-9.66E-08	-1.13E-07	-1.26E-07	-1.12E-07	-1.23E-07	-1.17E-07	-1.19E-07	-1.14E-07	-2.40E-08	-1.84E-08	1.64E-08	4.54E-08	4.33E-08	-5.79E-08
All	SCHOOL		1.04E-07	9.87E-08	1.02E-07	1.00E-07	1.01E-07	1.23E-07	1.72E-07	2.34E-07	1.14E-07	2.15E-07	4.39E-07	3.84E-07	3.73E-07	3.60E-07	3.48E-07	2.80E-07	2.28E-07	2.00E-07	2.09E-07	2.20E-07	2.26E-07	1.85E-07	1.35E-07	1.22E-07	2.11E-07
All	TRANPORT		1.02E-07	1.05E-07	9.94E-08	9.40E-08	8.78E-08	7.67E-08	8.38E-08	1.09E-07	1.13E-07	1.16E-07	1.11E-07	9.82E-08	9.94E-08	9.97E-08	9.81E-08	9.91E-08	1.05E-07	1.26E-07	1.28E-07	1.23E-07	1.10E-07	9.86E-08	9.55E-08	9.89E-08	1.03E-07
All	UNIVRSTY		7.57E-08	7.21E-08	7.20E-08	7.07E-08	7.03E-08	6.56E-08	1.21E-08	-1.02E-08	-8.75E-09	2.19E-08	1.36E-08	-1.31E-08	-2.29E-09	-2.16E-08	-3.81E-08	2.13E-08	3.30E-08	5.51E-08	6.31E-08	6.40E-08	6.35E-08	7.94E-08	9.47E-08	8.66E-08	3.92E-08
All	WAREHSEC		-1.84E-07	-1.90E-07	-1.99E-07	-1.82E-07	-1.91E-07	-2.02E-07	-1.78E-07	-1.85E-07	-1.85E-07	-2.07E-07	-1.96E-07	-2.06E-07	-2.15E-07	-2.29E-07	-2.24E-07	-2.26E-07	-2.22E-07	-2.19E-07	-2.13E-07	-2.15E-07	-2.15E-07	-1.96E-07	-2.02E-07	-2.16E-07	-2.04E-07
Shoulder	CHEMPROD		1.31E-09	-1.86E-08	-1.99E-08	-1.41E-08	-1.67E-08	-1.85E-08	-2.81E-08	-1.46E-08	-9.94E-10	-2.25E-09	-1.13E-08	-1.40E-08	-2.54E-08	-2.80E-08	-2.71E-08	-2.63E-08	1.18E-07	-1.58E-08	-2.08E-09	8.47E-09	-7.32E-09	-5.40E-09	2.16E-07	-6.46E-09	1.69E-09
Shoulder	COMM_OTH		4.87E-08	3.46E-08	3.80E-08	3.91E-08	3.58E-08	3.29E-08	2.86E-08	4.61E-08	5.35E-08	5.94E-08	6.28E-08	7.69E-08	6.92E-08	5.84E-08	3.04E-07	5.43E-08	3.59E-08	3.51E-08	5.28E-08	5.58E-08	4.04E-08	4.31E-08	9.51E-08	5.07E-08	6.05E-08
Shoulder	FOODRETAL		-3.15E-08	-3.25E-08	-2.30E-08	-2.82E-08	-2.70E-08	-9.86E-09	-3.29E-08	-2.48E-08	-2.38E-08	-1.59E-08	-4.13E-08	-5.67E-08	-6.56E-08	-8.04E-08	-7.70E-08	-9.05E-08	-4.66E-08	-5.51E-08	-7.29E-08	-6.87E-08	-4.09E-08	-3.57E-08	-4.67E-08	-3.94E-08	-4.45E-08
Shoulder	HOSPITAL		-3.69E-08	-8.91E-10	-1.38E-08	1.56E-08	-7.32E-09	-5.73E-10	1.77E-08	2.09E-08	2.38E-08	2.91E-08	2.32E-08	5.05E-08	-1.17E-07	-7.99E-08	-8.49E-08	-7.81E-08	-9.43E-08	-7.86E-08	-8.71E-08	-8.29E-08	7.96E-08	2.60E-08	4.03E-08	3.44E-08	-1.67E-08
Shoulder	HOTELS		5.50E-08	6.15E-08	7.13E-08	7.48E-08	7.53E-08	8.15E-08	7.72E-08	7.08E-08	6.79E-08	6.98E-08	7.31E-08	6.16E-08	5.37E-08	4.02E-08	4.54E-08	6.52E-08	6.73E-08	8.25E-08	6.46E-08	7.11E-08	7.09E-08	1.11E-07	4.92E-08	4.07E-08	6.68E-08
Shoulder	INDU_OTH		5.07E-08	5.73E-08	6.16E-08	6.31E-08	5.32E-08	5.85E-08	9.73E-08	4.61E-08	7.09E-08	5.63E-08	4.77E-08	-1.37E-08	7.86E-08	-1.79E-08	-2.33E-08	-2.95E-08	7.05E-08	4.06E-08	6.45E-08	3.03E-08	6.80E-08	6.48E-08	4.60E-08	5.05E-08	5.69E-08
Shoulder	NONBUILD		9.23E-08	5.91E-08	7.47E-08	7.36E-08	7.90E-08	7.35E-08	6.82E-08	7.26E-08	1.19E-07	1.26E-07	1.84E-07	-7.07E-08	1.82E-07	2.20E-07	2.21E-07	-7.80E-08	-7.88E-08	-8.25E-08	-1.06E-07	2.73E-07	1.06E-07	8.37E-08	7.79E-08	7.13E-08	7.67E-08
Shoulder	NONFOODR		1.70E-08	2.60E-08	2.36E-08	2.24E-08	1.65E-08	1.77E-08	1.64E-08	-9.42E-10	-2.10E-08	-4.07E-08	-1.65E-07	-1.78E-07	-2.08E-07	-2.43E-07	-1.98E-07	-2.13E-07	-1.29E-07	-1.36E-07	-1.49E-07	-2.98E-08	-6.35E-08	5.02E-09	1.00E-08	1.35E-08	-6.69E-08
Shoulder	NURSHOME		1.13E-07	1.31E-07	1.27E-07	1.28E-07	1.12E-07	1.12E-07	1.17E-07	1.23E-07	1.14E-07	1.22E-07	1.29E-07	1.59E-07	1.51E-07	1.49E-07	1.56E-07	1.36E-07	1.19E-07	9.40E-08	9.43E-08	1.13E-07	1.16E-07	1.24E-07	1.12E-07	1.17E-07	1.24E-07
Shoulder	OFFICES		4.19E-08	4.61E-08	4.63E-08	4.61E-08	3.99E-08	3.95E-08	3.83E-08	4.23E-08	4.05E-08	3.20E-08	3.37E-08	-1.48E-07	-1.54E-07	1.33E-07	1.56E-07	-1.40E-07	-9.97E-08	-1.05E-07	-1.44E-07	6.82E-08	4.36E-08	4.75E-08	4.24E-08	4.37E-08	8.02E-09
Shoulder	RESAPRCE		1.35E-07	1.37E-07	1.39E-07	1.52E-07	1.65E-07	1.91E-07	2.06E-07	2.09E-07	2.04E-07	1.51E-07	1.49E-07	1.54E-07	1.55E-07	1.47E-07	1.47E-07	1.47E-07	1.45E-07	1.44E-07	1.40E-07	1.44E-07	1.41E-07	1.39E-07	1.35E-07	1.37E-07	1.55E-07
Shoulder	RESROWE		1.91E-07	2.03E-07	1.89E-07	1.91E-07	1.85E-07	1.80E-07	1.89E-07	1.96E-07	1.87E-07	2.07E-07	2.30E-07	2.48E-07	2.41E-07	2.29E-07	2.28E-07	2.23E-07	2.43E-07	2.39E-07	2.24E-07	2.16E-07	2.11E-07	2.00E-07	1.98E-07	2.03E-07	2.10E-07
Shoulder	RESSFDE	RESSFDE, Shoulder	1.79E-07	1.98E-07	2.19E-07	2.32E-07	2.55E-07	2.93E-07	3.81E-07	5.09E-07	5.08E-07	3.02E-07	2.67E-07	2.51E-07	2.31E-07	2.13E-07	2.01E-07	2.12E-07	2.02E-07	2.13E-07	2.17E-07	2.27E-07	2.19E-07	2.23E-07	1.93E-07	1.86E-07	2.56E-07
Shoulder	RESSFDNE		9.71E-08	1.50E-07	7.97E-08	8.51E-08	7.66E-08	7.56E-08	8.57E-08	7.63E-08	8.92E-08	8.81E-08	8.07E-08	7.16E-08	7.47E-08	6.63E-08	6.21E-08	7.94E-08	7.28E-08	1.00E-07	1.23E-07	1.17E-07	1.30E-07	1.43E-07	1.12E-07	9.00E-08	9.28E-08
Shoulder	RSTAURNT		-3.29E-08	-1.17E-08	-1.75E-08	-1.18E-08	-1.90E-08	-7.22E-09	-5.59E-09	-1.02E-08	-1.95E-08	-8.69E-09	-2.21E-08	-7.94E-08	-9.16E-08	-9.08E-08	-7.32E-08	-8.80E-08	-7.95E-08	-4.89E-08	-9.86E-08	-4.87E-08	-6.42E-08	-5.22E-08	-9.81E-08	-8.06E-08	-4.83E-08
Shoulder	SCHOOL		7.16E-08	7.21E-08	7.47E-08	7.57E-08	7.00E-08	8.37E-08	9.80E-08	1.05E-07	1.25E-07	3.47E-08	4.61E-08	-5.87E-08	-1.04E-07	7.30E-07	-1.28E-07	-6.50E-08	1.94E-08	5.22E-08	8.42E-08	1.10E-07	8.90E-08	8.48E-08	8.15E-08	7.82E-08	7.63E-08
Shoulder	TRANPORT		8.31E-08	1.01E-07	8.97E-08	1.11E-07	6.26E-08	7.61E-08	1.27E-07	1.13E-07	9.65E-08	9.10E-08	1.06E-07	1.34E-07	2.72E-07	1.01E-07	1.27E-07	1.21E-07	6.93E-08	7.03E-08	8.12E-08	8.99E-08	7.90E-08	7.83E-08	6.41E-08	7.41E-08	1.01E-07
Shoulder	UNIVRSTY		6.82E-08	1.02E-07	6.21E-08	7.28E-08	6.26E-08	6.51E-08	7.71E-08	5.78E-08	5.20E-08	6.00E-08	1.76E-08	-1.70E-07	-1.73E-07	2.37E-07	-1.74E-07	-1.62E-07	-1.54E-07	1.05E-07	7.23E-08	1.14E-07	1.10E-07	1.15E-07	9.81E-08	8.01E-08	3.32E-08
Shoulder	WAREHSEC		-1.42E-07	-1.70E-07	-1.34E-07	-1.55E-07	-1.49E-07	-1.50E-07	-1.61E-07	-1.61E-07	-1.52E-07	-1.55E-07	-1.57E-07	-1.66E-07	-1.65E-07	-1.58E-07	-1.63E-07	-1.85E-07	-1.70E-07	-1.61E-07	-1.50E-07	-1.40E-07	-1.33E-07	-1.54E-07	-1.35E-07	-1.48E-07	-1.55E-07
Summer	CHEMPROD		6.92E-08	5.72E-08	6.18E-08	7.65E-08	7.01E-08	8.03E-08	2.60E-08	9.74E-08	-1.51E-08	1.03E-07	7.98E-08	-4.53E-08	-5.33E-08	4.02E-07	4.48E-07	3.51E-07	-4.72E-08	8.99E-08	1.49E-07	3.38E-07	1.38E-07	1.17E-07	1.03E-07	8.34E-08	1.16E-07
Summer	COMM_OTH		-7.46E-08	-5.98E-08	-7.35E-08	-4.76E-08	-5.23E-08	-5.57E-08	-4.42E-08	-3.31E-08	-2.61E-08	-5.57E-08	-4.02E-08	-5.73E-08	-5.33E-08	-6.85E-08	-5.96E-08	-6.01E-08	-5.98E-08	-5.99E-08	-5.09E-08	-3.84E-08	-5.04E-08	-1.81E-07	-5.27E-08	-8.28E-08	-5.99E-08
Summer	FOODRETAL		-4.78E-08	-4.83E-08	-4.64E-08	-4.47E-08	-4.06E-08	-3.76E-08	-5.03E-08	-4.81E-08	-4.41E-08	-4.43E-08	-6.02E-08	-7.44E-08	-4.57E-08	-7.88E-08	-7.87E-08	-7.27E-08	-7.44E-08	-8.01E-08	-7.66E-08	-8.14E-08	-7.79E-08	-7.27E-08	-6.10E-08	-5.63E-08	-6.01E-08
Summer	HOSPITAL		-8.18E-08	-8.26E-08	-8.08E-08	-7.32E-08	-5.95E-08	-6.71E-08	-7.43E-08	-5.69E-08	-2.31E-08	3.79E-08	-8.91E-08	-8.48E-08	-3.89E-08	-1.32E-07	3.70E-07	2.17E-07	-1.15E-07	-1.13E-07	-1.03E-07	-1.23E-07	-1.05E-07	-8.39E-08	-9.96E-08	-1.00E-07	-4.84E-08
Summer	HOTELS		-3.36E-07	-4.44E-07	-3.69E-07	-2.72E-07	-1.34E-07	-1.07E-07	-1.39E-07	-1.34E-07	-1.35E-07	-1.24E-07	-1.34E-07	-1.27E-07	-1.28E-07	-1.26E-07	-1.35E-07	-1.30E-07	-1.40E-07	-1.42E-07	-1.42E-07	-1.46E-07	-1.54E-07	-1.71E-07	-2.18E-07	-3.30E-07	-1.84E-07
Summer	INDU_OTH		5.22E-08	4.06E-08	2.25E-08	3.14E-08	6.56E-08	8.01E-08	1.02E-07	1.57E-07	5.79E-08	1.04E-07	2.19E-08	4.25E-08	3.70E-08	1.31E-08	3.17E-08	9.49E-09	-2.59E-08	-7.44E-09	-1.49E-08	-2.26E-08	6.89E-09	1.14E-07	2.12E-09	5.46E-08	4.07E-08
Summer	NONBUILD		-5.31E-08	-6.10E-08	-7.70E-08	-7.52E-08	-4.87E-08	-3.19E-08	-2.73E-08	-2.80E-08	-3.29E-08	-4.35E-08	-4.52E-08	-4.18E-08	-4.17E-08	-4.04E-08	-4.13E-08	-1.27E-07	-4.10E-08	-4.05E-08	-4.50E-08	-4.27E-08	-4.73E-08	-5.07E-08	-5.21E-08	-6.03E-08	-4.98E-08
Summer	NONFOODR		-6.81E-08	-5.85E-08	-4.24E-08	-3.28E-08	-2.33E-08	-3.81E-08	-6.17E-08	-7.74E-08	-1.04E-07	-1.17E-07	-1.04E-07	-1.03E-07	-9.45E-08	-1.01E-07	-9.90E-08	-1.04E-07	-1.03E-07	-9.44E-08	-7.87E-08	-6.59E-08	-6.26E-08	-5.16E-08	-7.84E-08	-7.64E-08	-7.67E-08
Summer	NURSHOME		1.34E-07	1.18E-07	1.24E-07	9.70E-08	1.17E-07	1.94E-07	2.41E-07	1.62E-07	1.81E-07	1.24E-07	4.60E-07	2.37E-07	-1.29E-07	1.91E-07	4.69E-07	-1.14E-07	-1.23E-07	-1.25E-07	-1.23E-07	1.93E-07	1.83E-07	1.70E-07	1.92E-07	1.74E-07	1.31E-07
Summer	OFFICES		2.94E-08	4.22E-08	6.76E-08	5.05E-08	-1.77E-08	8.75E-08	6.76E-08	8.04E-08	-5.42E-09	-7.68E-08	-6.01E-08	-5.83E-08	-4.93E-08	-7.45E-08	-5.58E-08	-6.58E-08	-8.01E-08	-9.23E-08	-9.93E-08	-1.21E-07	-9.21E-08	-8.69E-08	-9.20E-08	3.95E-08	-2.76E-08
Summer	RESAPRCE		1.01E-07	1.10E-07	9.34E-08	9.99E-08	1.17E-07	1.04E-07	1.28E-07	1.29E-07	1.23E-07	9.19E-08	1.04E-07	1.23E-07	9.44E-08	1.24E-07	1.26E-07	1.08E-07	1.31E-07	1.27E-07	8.46E-08	1.02E-07	8.93E-08	9.53E-08	1.02E-07	1.23E-07	1.10E-07
Summer	RESROWE		1.26E-07	1.33E-07	1.27E-07	1.49E-07	1.48E-07	1.35E-07	1.41E-07	9.60E-08	6.86E-08	1.74E-08	2.77E-08	3.14E-08	3.73E-08	3.73E-08	1.00E-07	6.04E-08	8.21E-08	6.93E-08	9.09E-08	9.60E-08	9.52E-08	7.76E-08	8.31E-08	1.08E-07	8.91E-08
Summer	RESSFDE	RESSFDE, Summer	5.89E-08	9.98E-08	1.27E-07	1.03E-07	1.05E-07	1.06E-07	1.52E-07	1.27E-07	1.40E-07	1.08E-07	6.89E-08	5.76E-08	7.01E-08	5.02E-08	6.30E-08	7.50E-08	1.70E-07	4.52E-08	4.19E-08	4.35E-08	1.78E-07	8.11E-08	5.85E-08	4.94E-08	9.08E-08
Summer	RESSFDNE		1.46E-07	9.23E-08	2.57E-08	1.20E-08	3.75E-08	3.64E-08	1.60E-07	2.12E-07	1.88E-07	2.16E-07	2.09E-07	8.48E-08	9.12E-08	6.69E-08	-2.29E-07	1.74E-07	-2.83E-07	1.22E-06	1.44E-07	2.24E-07	2.03E-07	1.86E-07	1.73E-07	2.05E-07	1.50E-07
Summer	RSTAURNT		-7.36E-08	-7.42E-08	-7.55E-08	-7.04E-08	-6.05E-08	-6.58E-08	-8.33E-08	-7.67E-08	-6.07E-08	-6.25E-08	-9.57E-08	-7.42E-08	-6.74E-08	-7.18E-08	-7.63E-08	-7.69E-08	-7.77E-08	-7.58E-08	-8.00E-08	-7.83E-08	-7.39E-08	-8.30E-08	-1.14E-07	-1.02E-07	-7.71E-08
Summer	SCHOOL		5.02E-08	5.52E-08	4.88E-08	5.10E-08	6.60E-08	9.36E-08	1.96E-07	2.71E-07	4.76E-07	4.35E-07	4.65E-07	6.44E-07	4.15E-07	3.54E-07	3.78E-07	2.81E-07	2.28E-07	1.75E-07	1.90E-07	1.84E-07	2.17E-07	2.18E-07	1.22E-07	5.32E-08	2.36E-07
Summer	TRANPORT		-3.54E-08	-2.08E-08	-2.93E-08	-3.56E-08	-4.43E-08	5.23E-09	2.69E-08	3.82E-08	1.27E-07	2.22E-08	-1.69E-09	-1.61E-08	6.50E-08	-2.28E-08	-1.00E-08	-2.09E-08	-2.55E-08	-2.44E-08	-1.46E-08	-3.14E-09	-2.21E-08	-2.74E-08	-3.49E-08	-2.93E-08	-5.60E-09
Summer	UNIVRSTY		3.55E-08	2.36E-08	1.31E-08	-1.28E-08	9.76E-09	6.45E-09	-3.34E-08	-3.71E-09	-4.84E-08	-2.22E-08	-8.08E-08	-7.67E-08	4.04E-08	-9.91E-08	2.67E-08	-8.96E-09	-1.39E-07	-1.18E-07	-1.21E-07	-1.10E-07	-7.80E-08	7.30E-08	1.03E-07	9.69E-08	-2.18E-08
Summer	WAREHSEC		-2.08E-07	-2.23E-07	-1.79E-07	-1.93E-07	-1.90E-07	-1.81E-07	-2.04E-07	-2.23E-07	-3.70E-07	-2.14E-07	-1.90E-07	-2.07E-07	-2.02E-07	-1.81E-07	-1.95E-07	-2.06E-07	-2.12E-07	-2.06E-07	-2.24E-07	-2.16E-07	-1.97E-07	-4.55E-07	-3.34E-07	-3.59E-07	-2.32E-07
Winter	CHEMPROD		-1.82E-07	-1.63E-07	-1.50E-07	-1.49E-07	-1.39E-07	-1.50E-07	-1.10E-07	-1.23E-07	-1.22E-07	-1.36E-07	-1.54E-07	-1.61E-07	-1.66E-07	-1.38E-07	-1.56E-07	-1.39E-07	-1.45E-07	-1.39E-07	-1.63E-07	-1.80E-07	-1.98E-07	-1.74E-07	-1.98E-07	-1.99E-07	-1.56E-07
Winter	COMM_OTH		7.75E-08	7.32E-08	6.66E-08	7.09E-08	6.17E-08	5.70E-08	5.46E-08	6.22E-08	6.03E-08	7.48E-08	7.50E-08	1.56E-07	1.43E-07	8.49E-08	1.18E-07	1.04E-07	7.48E-08	8.79E-08	8.90E-08	7.16E-08	5.28E-08	7.02E-08	7.98E-08	8.20E-08	8.11E-08
Winter	FOODRETAL		-2.70E-08	-2.87E-08	-2.47E-08	-2.51E-08	-2.40E-08	-2.35E-08	-2.58E-08	-2.67E-08	-4.10E-08	-3.92E-08	-3.37E-08	-2.93E-08	-3.22E-08	-2.62E-08	-2.68E-08	-2.85E-08	-2.72E-08	-1.72E-08	-2.00E-08	-5.09E-08	-5.27E-08	-3.68E-08	-3.32E-08	-3.05E-08	-3.05E-08
Winter	HOSPITAL		2.44E-08	2.19E-08	2.48E-08	2.34E-08	3.54E-08	2.66E-08	2.02E-08	1.96E-08	2.85E-08	1.74E-08	5.02E-08	2.31E-08	3.90E-08	4.33E-08	4.62E-08	4.90E-08	4.55E-08	9.65E-08	6.30E-08	6.22E-08	5.46E-08	4.62E-08	2.41E-08	2.28E-08	3.78E-08
Winter	HOTELS		1.73E-07	1.72E-07	1.50E-07	1.38E-07	1.35E-07	1.29E-07	1.16E-07	4.22E-08	1.32E-07	1.48E-07	1.93E-07	2.02E-07	2.09E-07	2.21E-07	2.40E-07	2.17E-07	2.02E-07	2.21E-07	2.11E-07	1.97E-07	1.91E-07	1.88E-07	1.87E-07	1.93E-07	1.75E-07
Winter	INDU_OTH		3.55E-08	4.03E-08	4.00E-08	3.90E-08	3.88E-08	4.13E-08	4.16E-08	2.62E-08	5.65E-09	5.38E-10	1.19E-08	-9.76E-09	-1.13E-08	-9.63E-09	-1.03E-08	-1.37E-08	9.47E-09	4.22E-08	8.27E-08	2.77E-08	-4.91E-10	8.67E-09	1.86E-08	3.17E-08	2.03E-08
Winter	NONBUILD		8.10E-08	7.84E-08	7.46E-08	5.86E-08	5.97E-08	4.74E-08	5.38E-08	5.42E-08	5.83E-08	7.64E-08	8.04E-08	8.10E-08	8.25E-08	8.29E-08	8.57E-08	8.69E-08	9.12E-08	9.37E-08	9.46E-08	8.97E-08	8.48E-08	8.60E-08	8.44E-08	8.24E-08	7.70E-08
Winter	NONFOODR		3.80E-08	3.31E-08	3.25E-08	3.27E-08	3.42E-08	2.77E-08	2.53E-08	3.05E-08	2.74E-08	1.24E-08	2.12E-08	2.74E-08	3.20E-08	3.15E-08	2.64E-08	2.72E-08	3.25E-08	4.33E-08	5.18E-08	4.61E-08	3.30E-08	4.68E-08	5.13E-08	4.85E-08	3.39E-08
Winter	NURSHOME		1.28E-07	1.27E-07	1.25E-07	1.23E-07	1.22E-07	1.19E-07	1.17E-07	1.10E-07	1.12E-07	1.24E-07	1.22E-07	1.34E-07	1.25E-07	1.20E-07	1.24E-07	1.28E-07	1.30E-07	1.39E-07	1.36E-07	1.38E-07	1.34E-07	1.32E-07	1.32E-07	1.29E-07	1.26E-07
Winter	OFFICES		4.38E-08	4.35E-08	4.33E-08	4.31E-08	4.18E-08	4.28E-08	3.91E-08	4.05E-08	3.49E-08	2.66E-08	2.81E-08	2.44E-08	2.27E-08	2.52E-08	1.87E-08	2.06E-08	2.88E-08	5.53E-08	4.86E-08	4.40E-08	4.22E-08	4.31E-08	4.52E-08	4.45E-08	3.71E-08
Winter	RESAPRCE		1.30E-07	1.24E-07	1.26E-07	1.23E-07	1.19E-07	1.21E-07	1.16E-07	1.14E-07	1.23E-07	1.20E-07	1.12E-07	1.21E-07	1.30E-07	1.33E-07	1.38E-07	1.32E-07	1.35E-07	1.44E-07	1.43E-07	1.46E-07	1.28E-07	1.38E-07	1.29E-07	1.37E-07	1.28E-07
Winter	RESROWE		1.81E-07	1.60E-07	1.58E-07	1.72E-07	1.81E-07	1.94E-07	1.93E-07	1.91E-07	2.12E-07	2.34E-07	1.59E-07	2.59E-07	2.12E-07	1.53E-07	1.83E-07	1.79E-07	2.06E-07	2.23E-07	2.25E-07	2.53E-07	2.81E-07	2.46E-07	2.33E-07	2.60E-07	2.06E-07
Winter	RESSFDE	RESSFDE, Winter	1.83E-07	1.90E-07	2.18E-07	2.34E-07	2.21E-07	2.15E-07	2.24E-07	2.20E-07	2.65E-07	3.13E-07	2.41E-07	3.71E-07	3.45E-07	2.51E-07	3.22E-07	2.98E-07	3.09E-07	2.75E-07	2.42E-07	2.21E-07	2.56E-07	2.43E-07	2.09E-07	1.96E-07	2.53E-07
Winter	RESSFDNE		1.20E-07	1.12E-07	1.06E-07	9.92E-08	9.39E-08	1.09E-07	1.10E-07	1.02E-07	1.09E-07	1.14E-07	1.25E-07	1.18E-07	1.22E-07	1.24E-07	1.38E-07	1.43E-07	1.43E-07	1.70E-07	1.95E-07	1.94E-07	1.65E-07	1.71E-07	1.50E-07	1.41E-07	1.32E-07
Winter	RSTAURNT		2.37E-08	9.72E-09	1.21E-08	1.41E-08	1.25E-08	1.04E-08	6.40E-09	-2.13E-09		-1.94E-09	-8.10E-09	-1.01E-08	-9.79E-09	-5.57E-09	-1.41E-08	-1.23E-08	-1.68E-08	-5.66E-09	1.76E-08	2.28E-08	2.13E-08	2.88E-08	3.82E-08	2.79E-08	6.91E-09
Winter	SCHOOL		8.01E-08	7.77E-08	8.04E-08	8.43E-08	8.19E-08	7.91E-08	7.30E-08	8.81E-08	1.12E-07	1.00E-07	9.31E-08	3.39E-08	4.25E-08	4.80E-08	4.68E-08	9.77E-08	1.29E-07	1.16E-07	8.61E-08	1.10E-07	6.30E-08	8.69E-08	8.68E-08	8.32E-08	8.25E-08
Winter	TRANPORT		1.10E-07	1.10E-07	1.10E-07	9.76E-08	9.14E-08	1.02E-07	9.76E-08	1.03E-07	8.88E-08	9.23E-08	8.59E-08	9.26E-08	9.90E-08	8.72E-08	7.88E-08	8.71E-08	1.06E-07	1.09E-07	9.41E-08	1.09E-07	1.08E-07	1.08E-07	1.10E-07	1.11E-07	9.96E-08
Winter	UNIVRSTY		4.37E-08	4.28E-08	1.26E-08	1.90E-08		2.23E-08			2.57E-08	1.95E-09	-1.01E-08	-2.93E-08	-3.77E-08	-3.53E-08	-4.17E-08	-1.94E-08	-1.26E-08	4.12E-09	5.09E-08	1.62E-08	-1.94E-08	1.12E-08	4.43E-08	4.80E-08	6.54E-09
Winter	WAREHSEC																-9.89E-08	-1.31E-07	-1.17E-07	-1.25E-07	-9.21E-08	-8.21E-08	-8.74E-08			-7.56E-08	-1.01E-07
All	System	System, All Seasons	8.73E-08	8.26E-08	7.77E-08	7.77E-08	7.60E-08	7.41E-08	6.99E-08	6.77E-08	7.62E-08	7.78E-08	8.00E-08	8.11E-08	8.17E-08	8.03E-08	8.05E-08	8.13E-08	8.14E-08	9.55E-08	1.09E-07	9.88E-08	9.54E-08	9.21E-08	9.41E-08	9.37E-08	8.38E-08
Shoulder	System	System, Shoulder	7.13E-08	6.30E-08	5.91E-08	6.42E-08	6.19E-08	6.62E-08	6.87E-08	7.44E-08	7.22E-08	7.14E-08	6.92E-08	7.33E-08	7.00E-08	6.75E-08	6.75E-08	5.96E-08	5.75E-08	6.21E-08	7.38E-08	7.82E-08	7.66E-08	7.59E-08	6.89E-08	7.27E-08	6.86E-08
Summer	System	System, Summer	3.87E-08	5.07E-08	9.16E-08	8.71E-08	8.71E-08	7.59E-08	9.56E-08	1.01E-07	1.08E-07	4.27E-08	1.50E-07	1.15E-07	4.08E-08	-5.76E-08	-1.23E-08	-5.44E-08	-6.40E-08	-6.47E-08	9.26E-08	1.50E-07	7.64E-08	6.42E-08	5.46E-08	5.19E-08	5.50E-08
Winter	System	System, Winter	6.69E-08	6.23E-08	6.04E-08	6.67E-08	6.04E-08	6.09E-08	6.41E-08	6.80E-08	6.57E-08	6.41E-08	6.53E-08	7.58E-08	7.25E-08	6.74E-08	6.76E-08	7.03E-08	7.29E-08	8.47E-08	9.01E-08	7.91E-08	7.28E-08	7.30E-08	7.16E-08	7.13E-08	6.97E-08

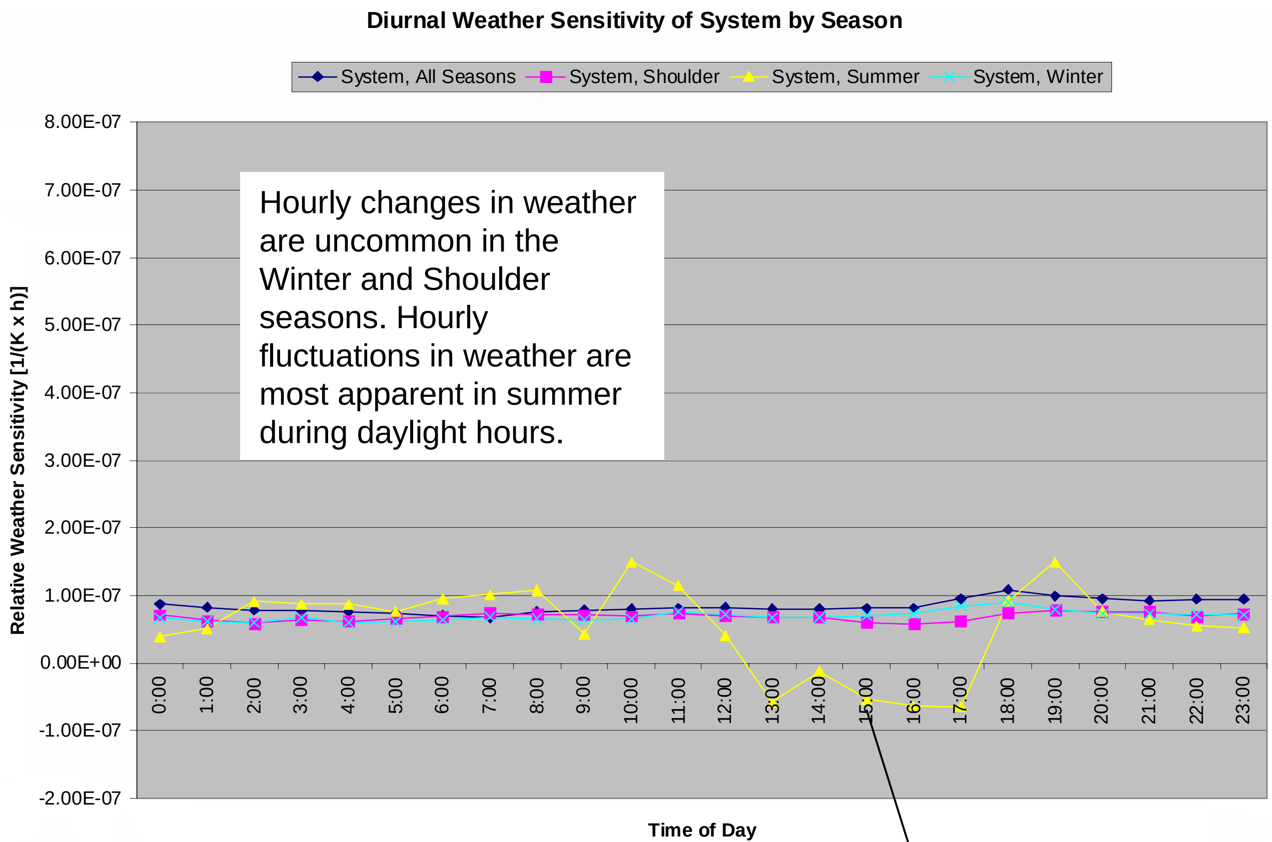
Relative weather sensitivity in the steady-state

Weather sensitivity was normalized so that comparisons could be made between site types and seasons.

On the BC Hydro grid, relative weather sensitivity is equally high in Winter and the shoulder months of April, May, September and October. The low summer value is a result of negative sensitivity values related to air-conditioning.

Season	BC Hydro System Steady-state Relative Weather Sensitivity $[1/(K\cdot h)] \times 10^{-8}$
All	8.38
Shoulder	6.86
Summer	5.50
Winter	6.97

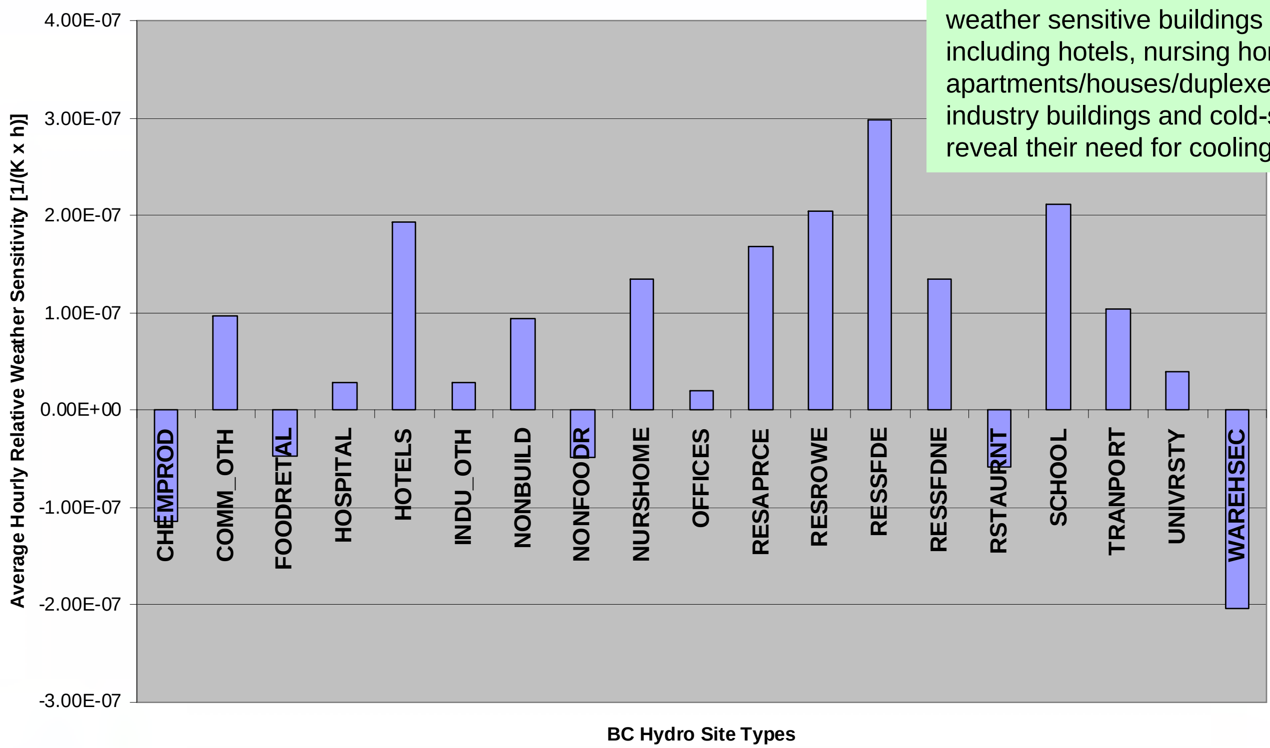
BC hydro
FOR GENERATIONS



Summertime air-conditioning in South Interior (?)

BC hydro
FOR GENERATIONS

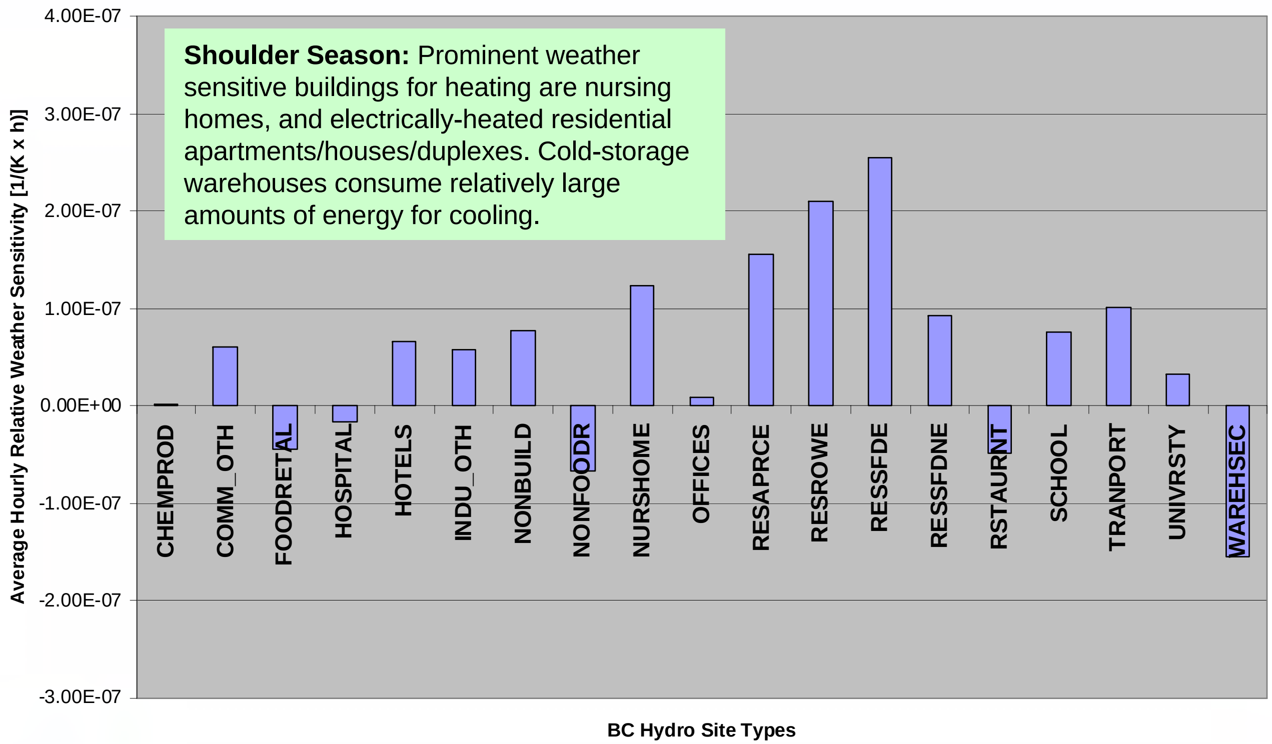
Average Hourly Relative Weather Sensitivity of Site Types
All Seasons



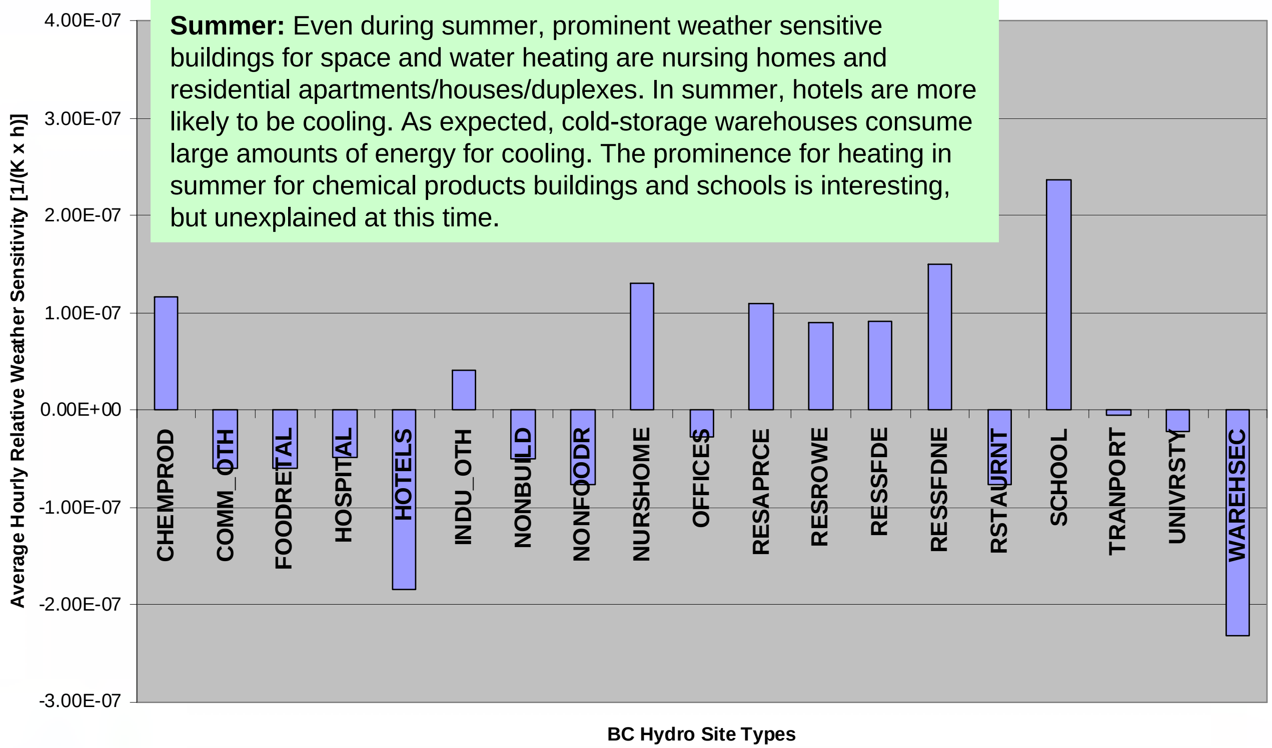
All Seasons: With the exception of schools, the most weather sensitive buildings for heating are domiciles, including hotels, nursing homes, and residential apartments/houses/duplexes. Chemical products industry buildings and cold-storage warehouses reveal their need for cooling, as opposed to heating.

BC hydro FOR GENERATIONS

Average Hourly Relative Weather Sensitivity of Site Types
Shoulder Season Months (April, May, Sept, Oct)

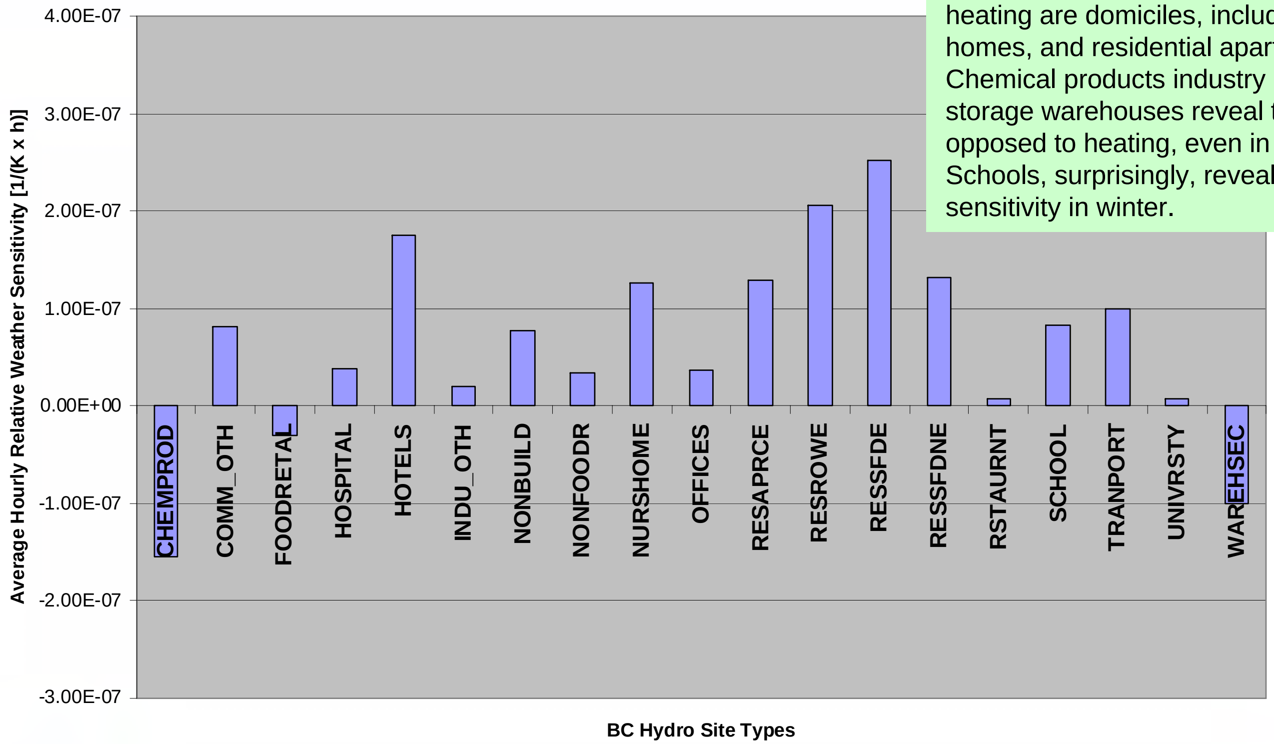


Average Hourly Relative Weather Sensitivity of Site Types
Summer Season

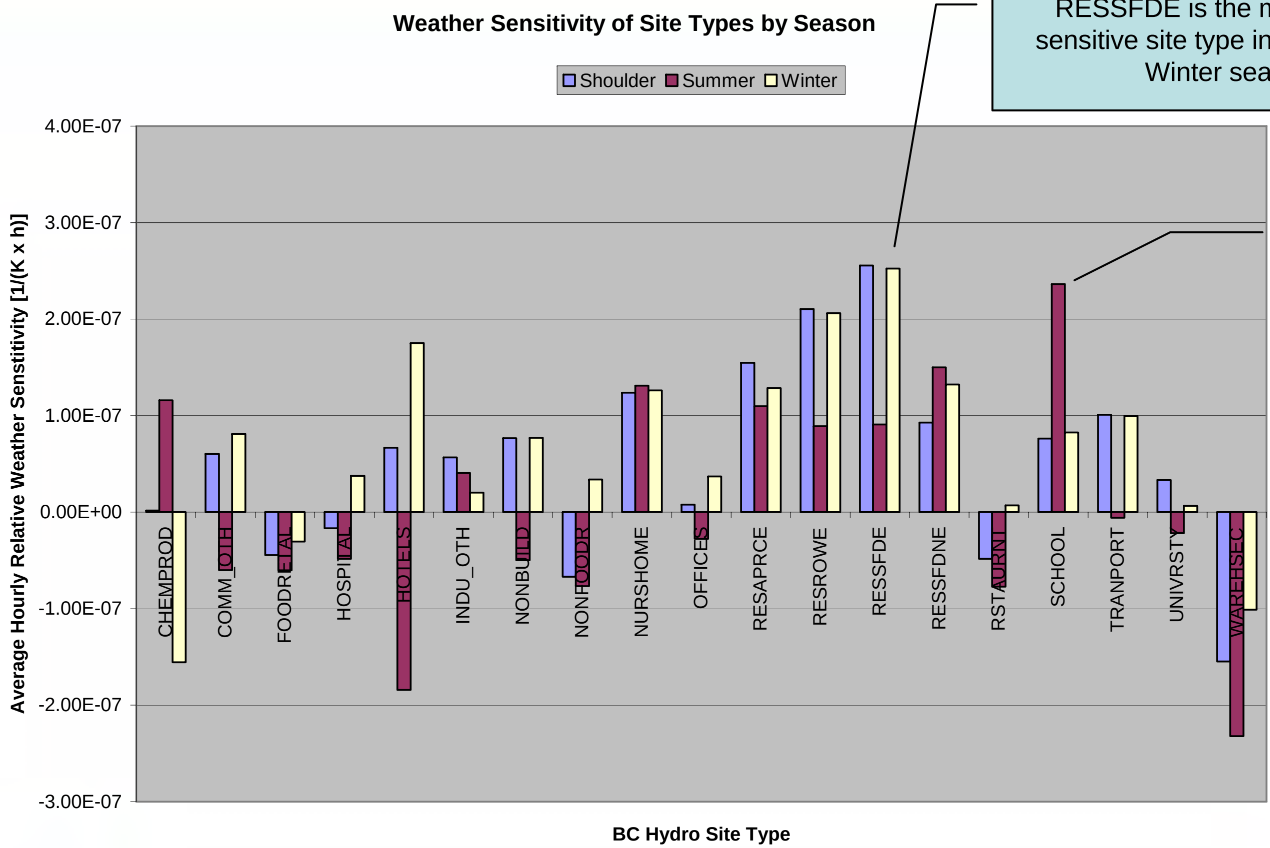


Summer: Even during summer, prominent weather sensitive buildings for space and water heating are nursing homes and residential apartments/houses/duplexes. In summer, hotels are more likely to be cooling. As expected, cold-storage warehouses consume large amounts of energy for cooling. The prominence for heating in summer for chemical products buildings and schools is interesting, but unexplained at this time.

Average Hourly Relative Weather Sensitivity of Site Types
Winter Season



Winter: The most weather sensitive buildings for heating are domiciles, including hotels, nursing homes, and residential apartments/houses/duplexes. Chemical products industry buildings and cold-storage warehouses reveal their need for cooling, as opposed to heating, even in this coldest season. Schools, surprisingly, reveal relatively low weather sensitivity in winter.



RESSFDE is the most weather sensitive site type in Shoulder and Winter seasons

Schools are the most weather sensitive site type in Summer

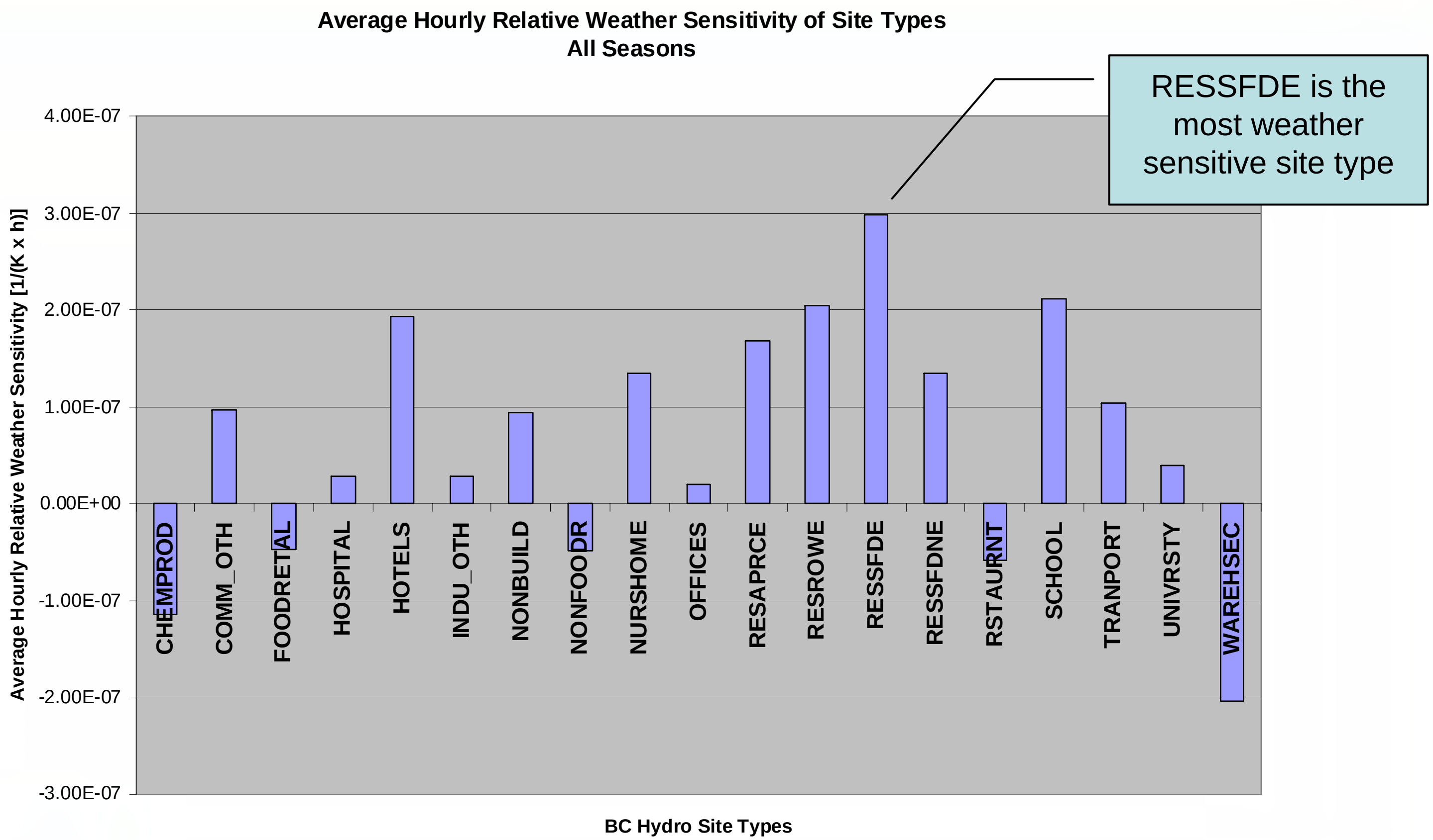
Negative values of weather sensitivity imply energy consumption for cooling in summer especially by hotels, restaurants, and cold storage.

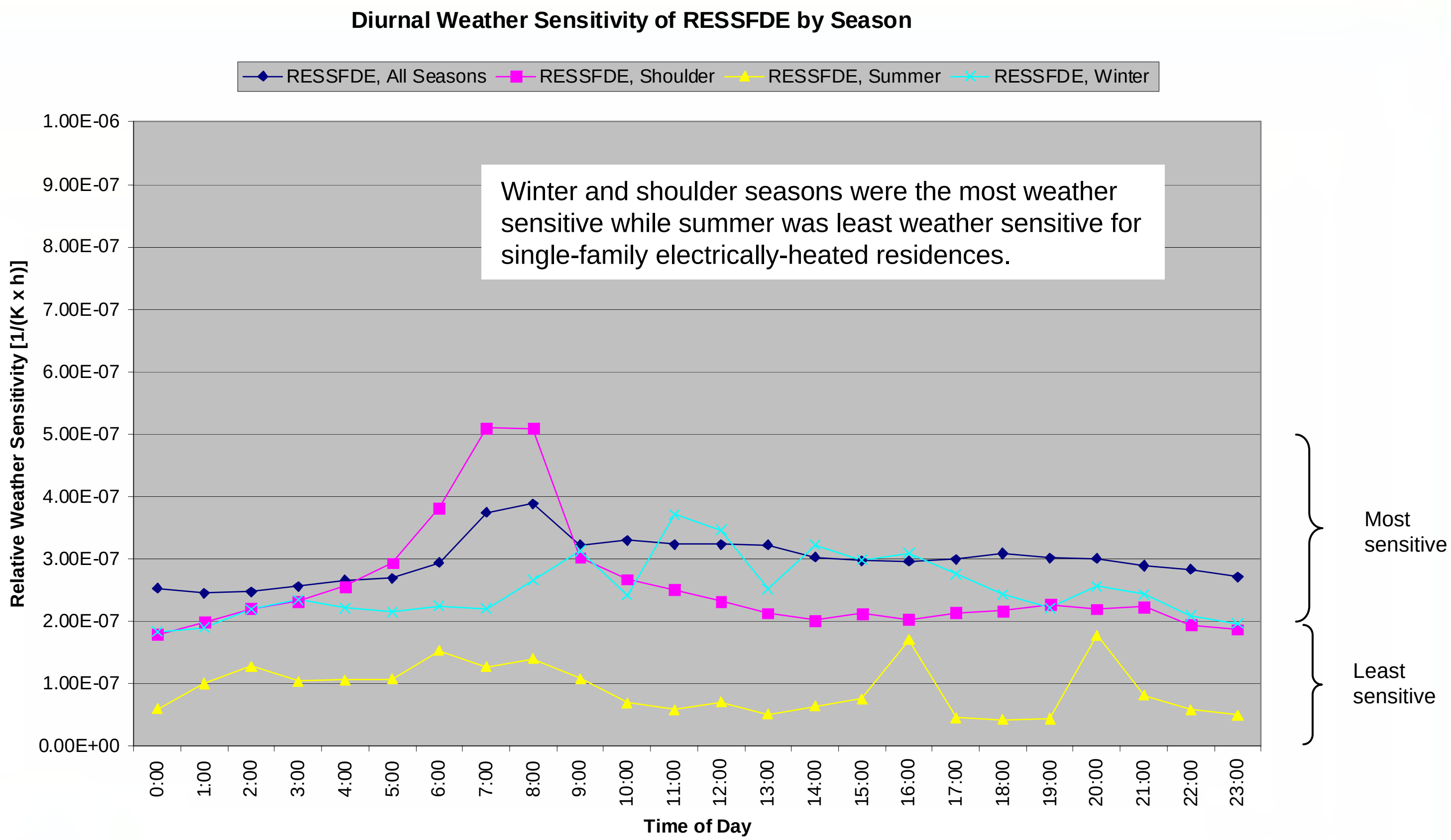
BC hydro FOR GENERATIONS

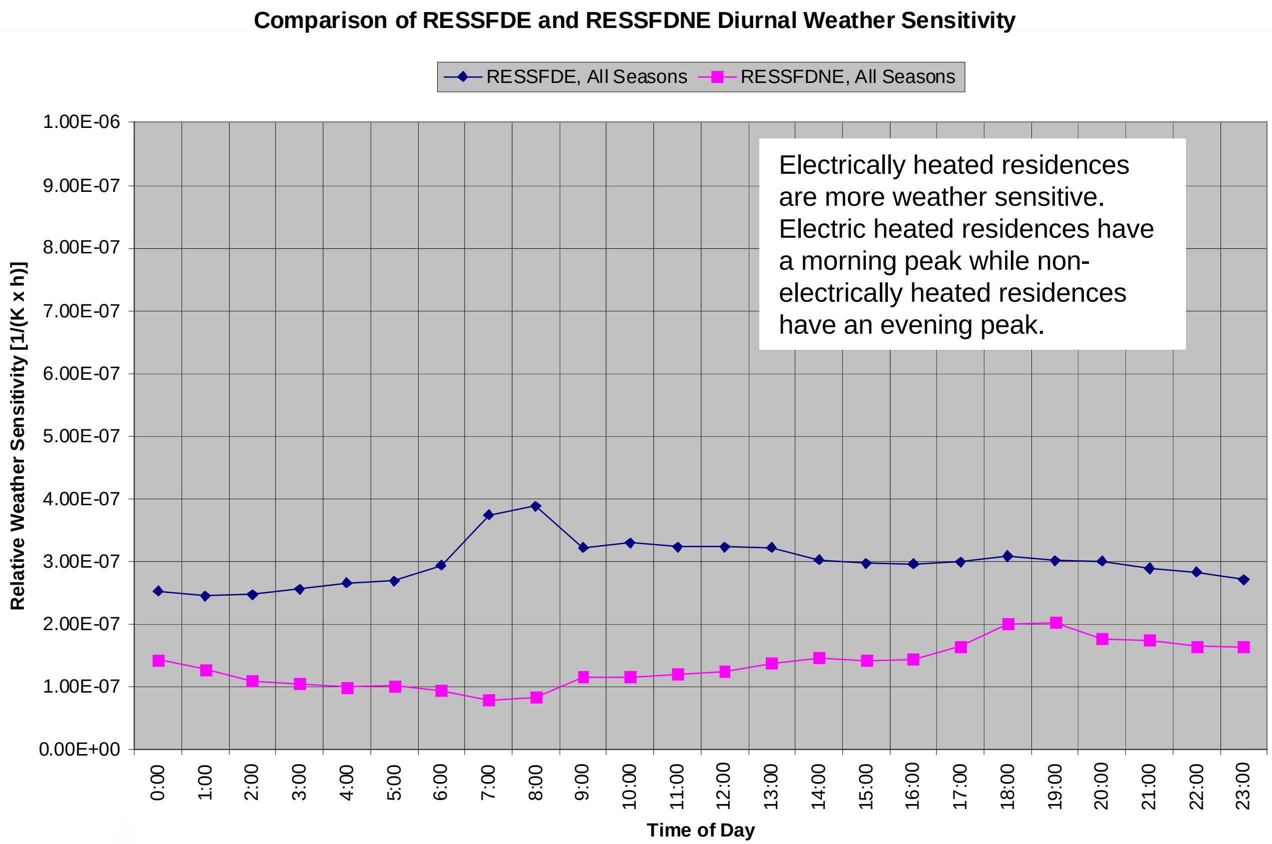
Roland V Wahlgren, Load Research Analyst
BC Hydro Customer Information Management—Load Analysis

RESSFDE Hourly Data Analyses for F0708

Residential – Single/Duplex (Elec. Heat)

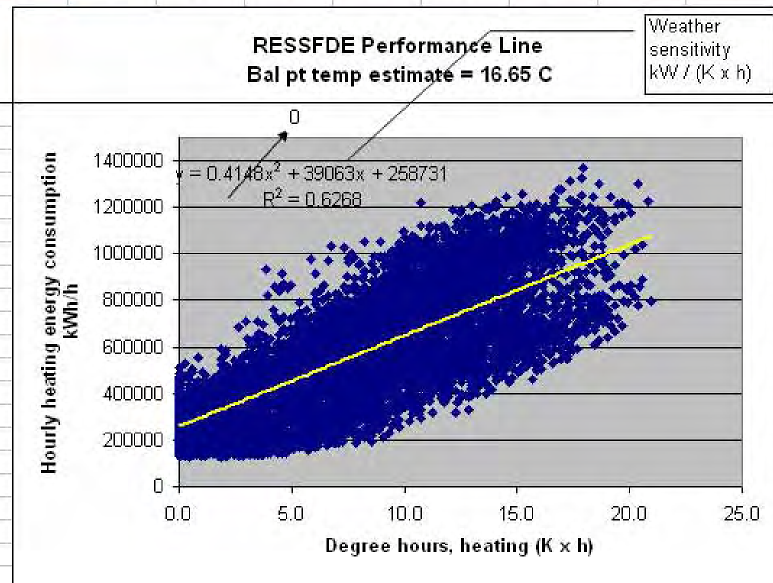

Average Hourly Relative Weather Sensitivity of Site Types
All Seasons
RESSFDE is the most weather sensitive site type
4.00E-07
3.00E-07
2.00E-07
1.00E-07
0.00E+00
-1.00E-07
-2.00E-07
-3.00E-07
Average Hourly Relative Weather Sensitivity [1/(K x h)]
CHEMPROD
COMM_OTH
FOODRETAL
HOSPITAL
HOTELS
INDU_OTH
NONBUILD
NONFOODR
NURSHOME
OFFICES
RESAPRCE
RESROWE
RESSFDE
RESSFDNE
RSTAURNT
SCHOOL
TRANPORT
UNIVRSTY
WAREHSEC
BC Hydro Site Types

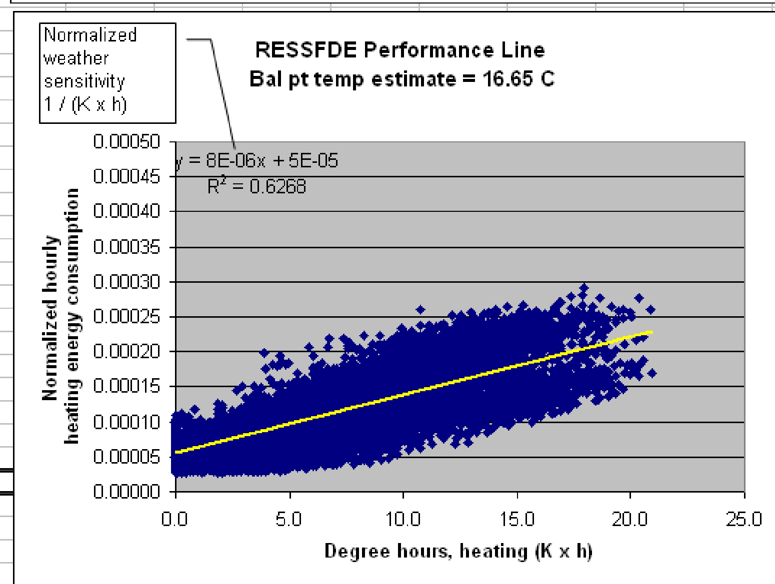

Diurnal Weather Sensitivity of RESSFDE by Season
RESSFDE, All Seasons
RESSFDE, Shoulder
RESSFDE, Summer
RESSFDE, Winter
Winter and shoulder seasons were the most weather sensitive while summer was least weather sensitive for single-family electrically-heated residences.
Relative Weather Sensitivity [1/(K x h)]
1.00E-06
9.00E-07
8.00E-07
7.00E-07
6.00E-07
5.00E-07
4.00E-07
3.00E-07
2.00E-07
1.00E-07
0.00E+00
0:00
1:00
2:00
3:00
4:00
5:00
6:00
7:00
8:00
9:00
10:00
11:00
12:00
13:00
14:00
15:00
16:00
17:00
18:00
19:00
20:00
21:00
22:00
23:00
Time of Day
Most sensitive
Least sensitive


Comparison of RESSFDE and RESSFDNE Diurnal Weather Sensitivity
RESSFDE, All Seasons
RESSFDNE, All Seasons
Relative Weather Sensitivity [1/(K x h)]
1.00E-06
9.00E-07
8.00E-07
7.00E-07
6.00E-07
5.00E-07
4.00E-07
3.00E-07
2.00E-07
1.00E-07
0.00E+00
0:00
1:00
2:00
3:00
4:00
5:00
6:00
7:00
8:00
9:00
10:00
11:00
12:00
13:00
14:00
15:00
16:00
17:00
18:00
19:00
20:00
21:00
22:00
23:00
Time of Day
Electrically heated residences are more weather sensitive. Electric heated residences have a morning peak while non-electrically heated residences have an evening peak.

Microsoft Excel - RESSFDE bal temp.xls

	Excel Date	Month	Day	Time	Weekday	LR EC Dry Bulb C	DHh (K x h) at Base Temp (C) 16.65000	Consumption kWh RESSFDE	Normalized Consumption RESSFDE
2	01-Apr-07	4	1	1:00:00	Sun	5.90	10.75	486944.14	0.00010351
3	01-Apr-07	4	1	2:00:00	Sun	5.70	10.95	475372.91	0.00010105
4	01-Apr-07	4	1	3:00:00	Sun	4.90	11.75	500157.82	0.00010632
5	01-Apr-07	4	1	4:00:00	Sun	5.40	11.25	506887.5	0.00010775
6	01-Apr-07	4	1	5:00:00	Sun	5.00	11.65	516792.48	0.00010985
7	01-Apr-07	4	1	6:00:00	Sun	5.00	11.65	610996.63	0.00012988
8	01-Apr-07	4	1	7:00:00	Sun	5.10	11.55	744299.56	0.00015822
9	01-Apr-07	4	1	8:00:00	Sun	5.10	11.55	835687.66	0.00017764
10	01-Apr-07	4	1	9:00:00	Sun	5.40	11.25	862175.41	0.00018327
11	01-Apr-07	4	1	10:00:00	Sun	5.70	10.95	834709.64	0.00017743
12	01-Apr-07	4	1	11:00:00	Sun	6.40	10.25	742952.17	0.00015793
13	01-Apr-07	4	1	12:00:00	Sun	6.80	9.85	669998.81	0.00014242
14	01-Apr-07	4	1	13:00:00	Sun	8.00	8.65	634031.34	0.00013478
15	01-Apr-07	4	1	14:00:00	Sun	8.10	8.55	622218.06	0.00013227
16	01-Apr-07	4	1	15:00:00	Sun	8.90	7.75	644798.82	0.00013707
17	01-Apr-07	4	1	16:00:00	Sun	10.20	6.45	661284.24	0.00014057
18	01-Apr-07	4	1	17:00:00	Sun	8.80	7.85	677306.9	0.00014398
19	01-Apr-07	4	1	18:00:00	Sun	8.20	8.45	690157.47	0.00014671
20	01-Apr-07	4	1	19:00:00	Sun	8.00	8.65	793250.62	0.00016862
21	01-Apr-07	4	1	20:00:00	Sun	7.20	9.45	823467.75	0.00017505
22	01-Apr-07	4	1	21:00:00	Sun	6.80	9.85	775222.5	0.00016479
23	01-Apr-07	4	1	22:00:00	Sun	5.50	11.15	680452.61	0.00014464
24	01-Apr-07	4	1	23:00:00	Sun	2.80	13.85	558953.09	0.00011882
25									0.0001074
26									0.0001025
27									0.00010083
28									0.0001092
29									0.00012478
30									0.00013176
31									0.00017754
32									0.00018976
33									0.00021536
34	02-Apr-07	4	2	9:00:00	Mon	3.40	13.25	1008352.35	0.00021435
35	02-Apr-07	4	2	10:00:00	Mon	4.00	12.65	848439.84	0.00018035
36									00018214
37									00015585
38									00012229
39									00010073
40									00010826
41									00012024
42									00013479
43									00014087
44									00015393
45									00017544
46									00016445
47									00014063
48	02-Apr-07	4	2	23:00:00	Mon	3.60	13.05	566269.08	0.00012037
49	03-Apr-07	4	3	0:00:00	Tue	3.70	12.95	506837.62	0.00010774





The evidence of two sample populations in this and other charts for various site types was explained by charting separate energy signatures for 03:00 and 20:00 corresponding to BC Hydro's System daily consumption minimum and maximum respectively. Analyses by hour were unaffected by the dual population phenomenon.

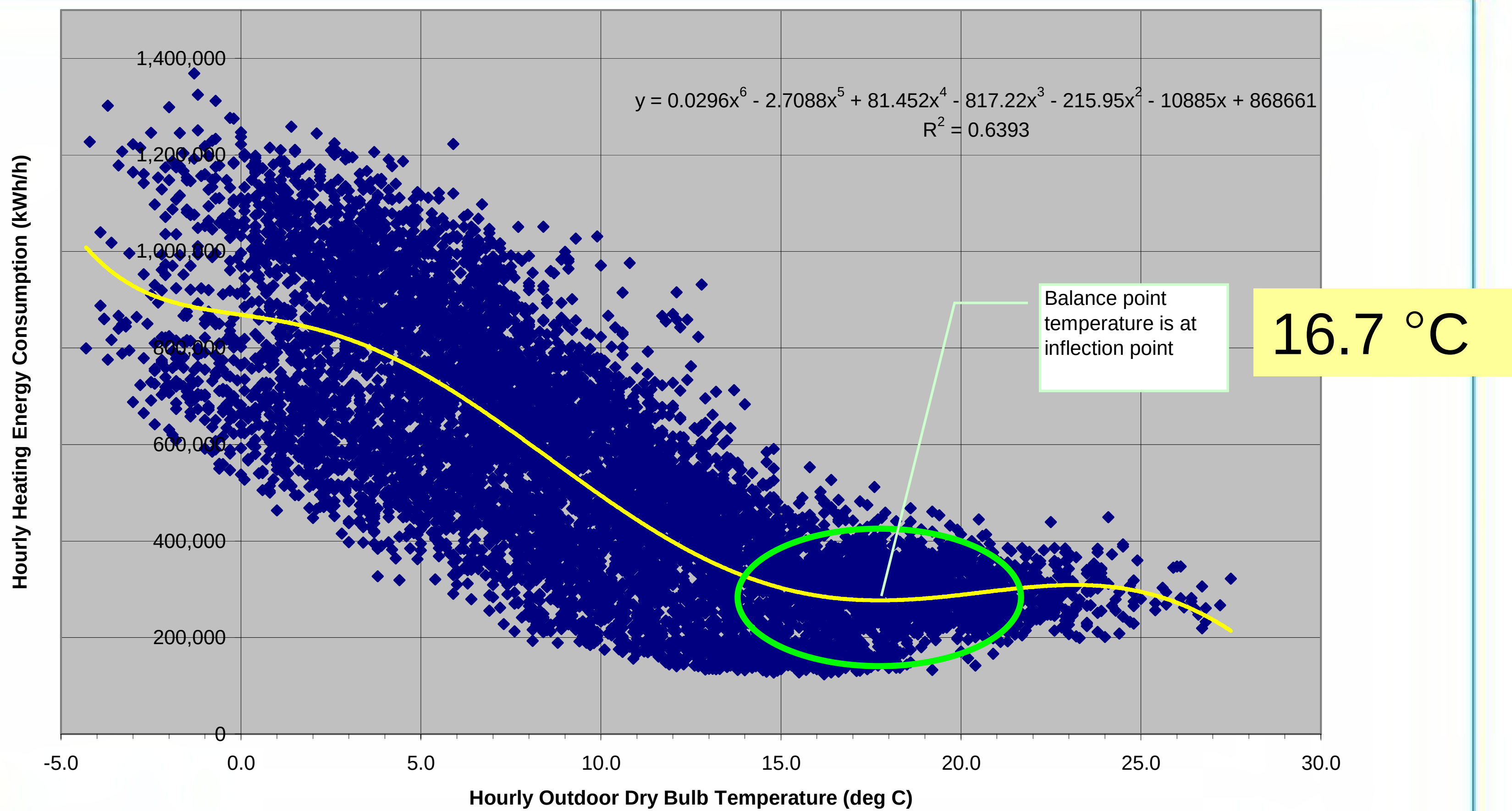
For entire set of RESSFDE data points,

BPT = 16.7°C

RESSFDE wxsensdata / Chart-RESSFDE Energy Signature / RESSFDE wxsensdata 0100 / RESSFDE wxsensdata 0200

Ready NUM

RESSFDE Energy Signature



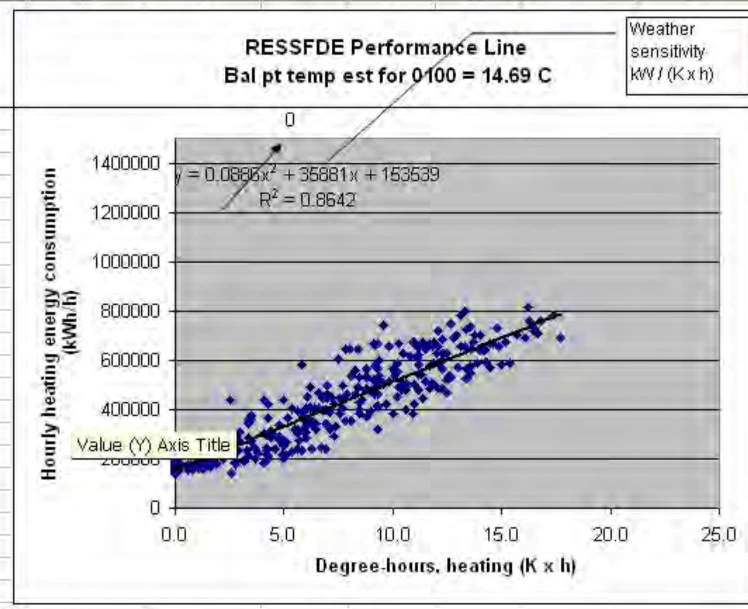
The evidence of two sample populations in this and other charts for various site types was explained by charting separate energy signatures for 03:00 and 20:00 corresponding to BC Hydro's System daily consumption minimum and maximum respectively. Analyses by hour were unaffected by the dual population phenomenon.

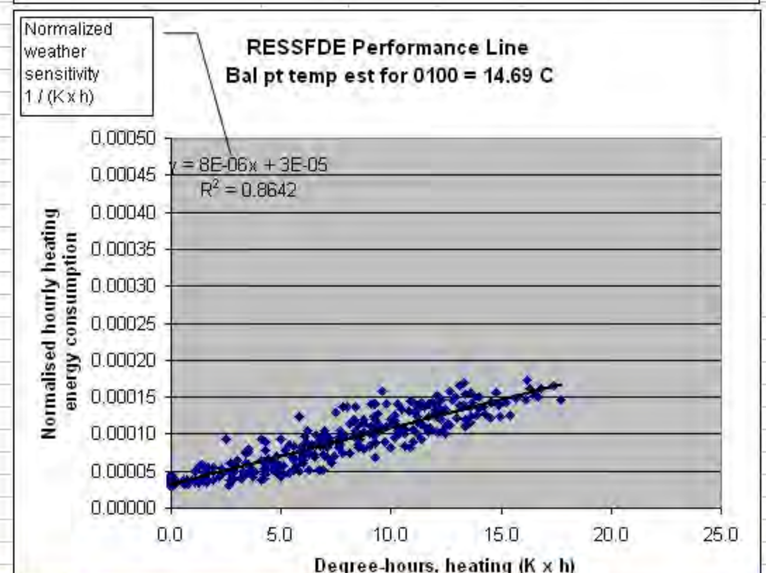
BC hydro FOR GENERATIONS

For electrically heated single family houses/duplexes, selected slides show how observations of BPT fluctuate hourly:

At 0100, BPT = 14.7°C

Row	Excel Date	Month	Day	Time	Weekday	LR EC Dry Bulb C	DHh (K×h) at Base Temp (C) 14.69000	Consumption kWh RESSFDE	Normalized Consumption RESSFDE
2	01-Apr-07	4	1	1:00:00	Sun	5.90	8.79	486944.14	0.00010351
26	02-Apr-07	4	2	1:00:00	Mon	3.00	11.69	482174	0.0001025
50	03-Apr-07	4	3	1:00:00	Tue	3.70	10.99	500484.04	0.00010639
74	04-Apr-07	4	4	1:00:00	Wed	6.30	8.39	490951.29	0.00010436
98	05-Apr-07	4	5	1:00:00	Thu	7.40	7.29	423102.16	8.9939E-05
122	06-Apr-07	4	6	1:00:00	Fri	8.80	5.89	361531.89	7.6851E-05
146	07-Apr-07	4	7	1:00:00	Sat	10.00	4.69	278557.26	5.9213E-05
170	08-Apr-07	4	8	1:00:00	Sun	11.30	3.39	282506.06	6.0052E-05
194	09-Apr-07	4	9	1:00:00	Mon	8.70	5.99	356845.99	7.5855E-05
218	10-Apr-07	4	10	1:00:00	Tue	7.60	7.09	386940.13	8.2252E-05
242	11-Apr-07	4	11	1:00:00	Wed	6.20	8.49	424944.63	9.0331E-05
266	12-Apr-07	4	12	1:00:00	Thu	7.90	6.79	392400.8	8.3413E-05
290	13-Apr-07	4	13	1:00:00	Fri	8.50	6.19	411729.78	8.7522E-05
314	14-Apr-07	4	14	1:00:00	Sat	9.70	4.99	439604.92	9.3447E-05
338	15-Apr-07	4	15	1:00:00	Sun	7.00	7.69	404564.57	8.5999E-05
362	16-Apr-07	4	16	1:00:00	Mon	8.50	6.19	356709.42	7.5826E-05
386	17-Apr-07	4	17	1:00:00	Tue	3.80	10.89	383880.02	8.1602E-05
410	18-Apr-07	4	18	1:00:00	Wed	6.20	8.49	383694.6	8.1562E-05
434	19-Apr-07	4	19	1:00:00	Thu	5.70	8.99	394476.43	8.3854E-05
458	20-Apr-07	4	20	1:00:00	Fri	5.90	8.79	371654.4	7.9003E-05
482	21-Apr-07	4	21	1:00:00	Sat	5.40	9.29	320227.01	6.8071E-05
506	22-Apr-07	4	22	1:00:00	Sun	10.40	4.29	362622.82	7.7083E-05
530	23-Apr-07	4	23	1:00:00	Mon	7.40	7.29	289822.14	6.1608E-05
554	24-Apr-07	4	24	1:00:00	Tue	11.80	2.89	234764.39	4.9904E-05
578	25-Apr-07	4	25	1:00:00	Wed	8.70	5.99	328385.84	6.9805E-05
602	26-Apr-07	4	26	1:00:00	Thu	8.20	6.49	318904.79	6.779E-05
626	27-Apr-07	4	27	1:00:00	Fri	9.90	4.79	334233.54	7.1048E-05
1058	15-May-07	5	15	1:00:00	Tue	9.70	4.99	197914.49	4.2071E-05
1082	16-May-07	5	16	1:00:00	Wed	11.90	2.79	175193.46	3.7241E-05
1106	17-May-07	5	17	1:00:00	Thu	9.60	5.09	266469	5.6643E-05
1130	18-May-07	5	18	1:00:00	Fri	9.70	4.99	252199.67	5.361E-05





Hourly observations of BPT:

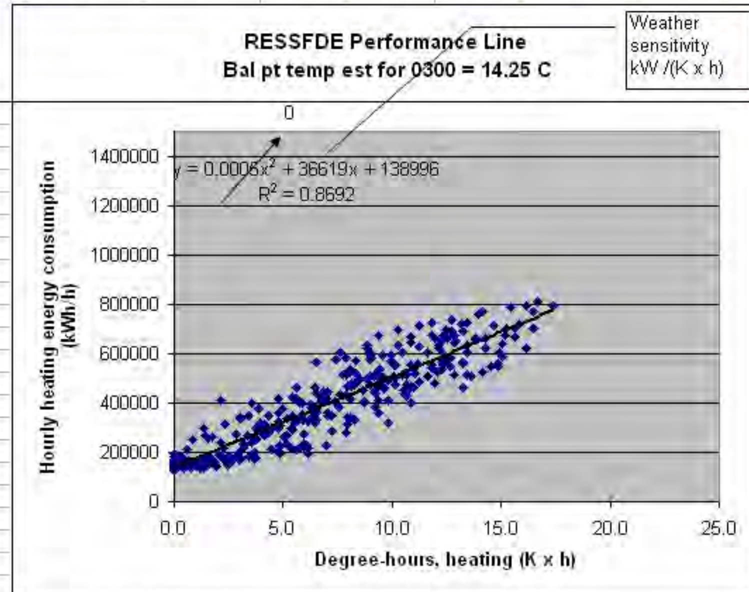
At 0300, BPT = 14.3°C

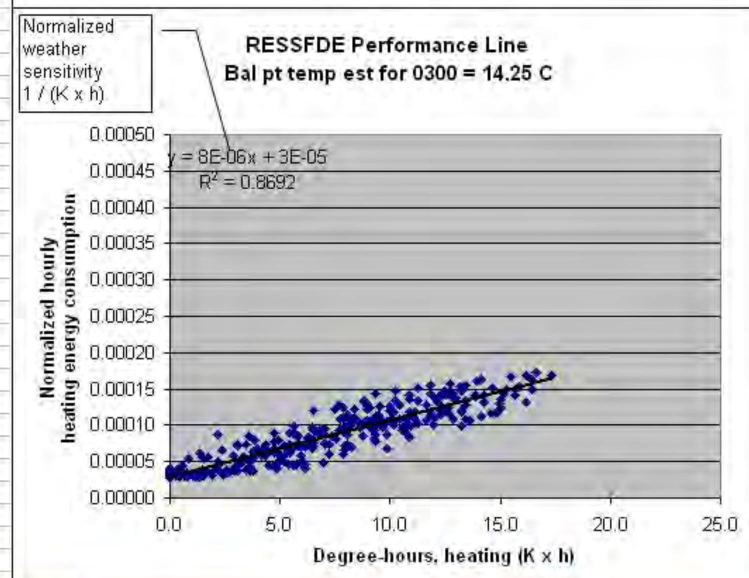
Microsoft Excel - RESSFDE bal temp F0708.xls

I4 =H4/'RSSFDE wxsensdata'!$H$8786

Row	Excel Date	Month	Day	Time	Weekday	LR EC Dry Bulb C	DHh (K×h) at Base Temp (C) 14.25000	Consumption kWh RESSFDE	Normalized Consumption RESSFDE
4	01-Apr-07	4	1	3:00:00	Sun	4.90	9.35	500157.82	0.00010632
28	02-Apr-07	4	2	3:00:00	Mon	3.60	10.65	513716.09	0.0001092
52	03-Apr-07	4	3	3:00:00	Tue	2.00	12.25	563076.02	0.00011969
76	04-Apr-07	4	4	3:00:00	Wed	5.30	8.95	473673.43	0.00010069
100	05-Apr-07	4	5	3:00:00	Thu	7.60	6.65	426362.42	9.0632E-05
124	06-Apr-07	4	6	3:00:00	Fri	7.70	6.55	359516.43	7.6423E-05
148	07-Apr-07	4	7	3:00:00	Sat	10.10	4.15	269278.24	5.7241E-05
172	08-Apr-07	4	8	3:00:00	Sun	11.40	2.85	273735.57	5.8188E-05
196	09-Apr-07	4	9	3:00:00	Mon	9.10	5.15	335888.46	7.14E-05
220	10-Apr-07	4	10	3:00:00	Tue	6.70	7.55	381312.5	8.1056E-05
244	11-Apr-07	4	11	3:00:00	Wed	5.00	9.25	437132.4	9.2921E-05
268	12-Apr-07	4	12	3:00:00	Thu	7.30	6.95	433261.32	9.2099E-05
292	13-Apr-07	4	13	3:00:00	Fri	8.00	6.25	380327.24	8.0846E-05
316	14-Apr-07	4	14	3:00:00	Sat	9.50	4.75	416192.71	8.847E-05
340	15-Apr-07	4	15	3:00:00	Sun	6.20	8.05	414311.82	8.8071E-05
364	16-Apr-07	4	16	3:00:00	Mon	7.90	6.35	340994.46	7.2485E-05
388	17-Apr-07	4	17	3:00:00	Tue	4.90	9.35	413444.32	8.7886E-05
412	18-Apr-07	4	18	3:00:00	Wed	4.40	9.85	408619.77	8.6861E-05
436	19-Apr-07	4	19	3:00:00	Thu	4.10	10.15	472531.84	0.00010045
460	20-Apr-07	4	20	3:00:00	Fri	5.00	9.25	380785.39	8.0944E-05
484	21-Apr-07	4	21	3:00:00	Sat	4.40	9.85	318814.74	6.7771E-05
508	22-Apr-07	4	22	3:00:00	Sun	9.50	4.75	361584.6	7.6862E-05
532	23-Apr-07	4	23	3:00:00	Mon	8.30	5.95	275848.97	5.8637E-05
556	24-Apr-07	4	24	3:00:00	Tue	10.50	3.75	256137.93	5.4447E-05
580	25-Apr-07	4	25	3:00:00	Wed	6.30	7.95	311707.24	6.626E-05
604	26-Apr-07	4	26	3:00:00	Thu	8.10	6.15	327337.39	6.9582E-05
628	27-Apr-07	4	27	3:00:00	Fri	9.80	4.45	297381.27	6.3215E-05
652	28-Apr-07	4	28	3:00:00	Sat	7.80	6.45	360734.1	7.6681E-05
676	29-Apr-07	4	29	3:00:00	Sun	7.80	6.45	319422.78	6.79E-05
700	30-Apr-07	4	30	3:00:00	Mon	7.00	7.25	346055.21	7.3561E-05
724	01-May-07	5	1	3:00:00	Tue	8.80	5.45	348933.4	7.4173E-05
748	02-May-07	5	2	3:00:00	Wed	10.00	4.25	295662.94	6.2849E-05
772	03-May-07	5	3	3:00:00	Thu	6.00	8.25	331725.72	7.0515E-05
796	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
820	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
844	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
868	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
892	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
916	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
940	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
964	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
988	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
1012	13-May-07	5	13	3:00:00	Sun	9.40	4.85	228443.32	4.856E-05
1036	14-May-07	5	14	3:00:00	Mon	9.20	5.05	261016.35	5.5484E-05
1060	15-May-07	5	15	3:00:00	Tue	9.40	4.85	192231.53	4.0863E-05
1084	16-May-07	5	16	3:00:00	Wed	11.70	2.55	180370.16	3.8341E-05
1108	17-May-07	5	17	3:00:00	Thu	10.10	4.15	287635.24	6.1143E-05
1132	18-May-07	5	18	3:00:00	Fri	8.30	5.95	227203.89	4.8297E-05

RSSFDE wxsensdata 0100 | RSSFDE wxsensdata 0200 | **RSSFDE wxsensdata 0300** | RSSFDE wxsensdata 0

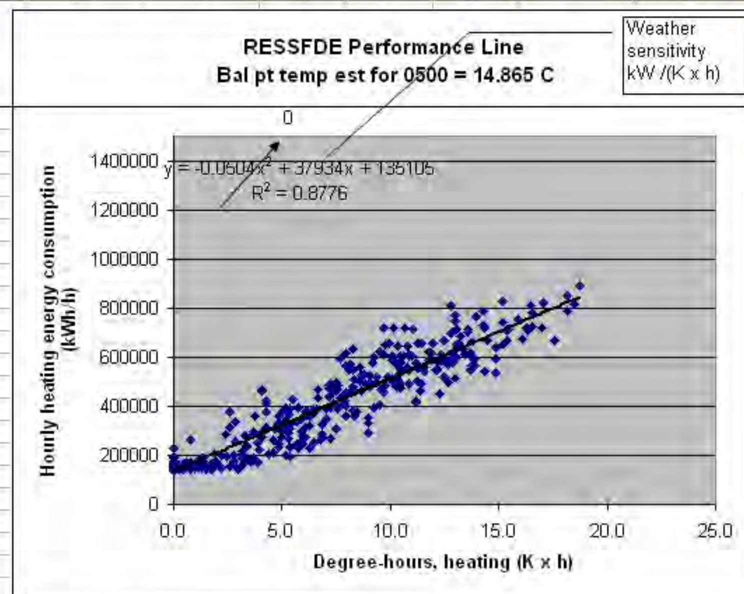


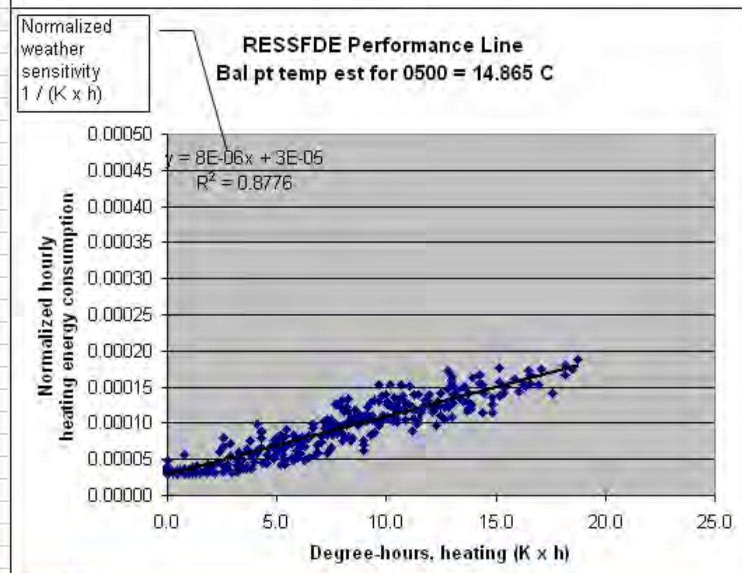


Microsoft Excel - RESSFDE bal temp F0708.xls

I6 =H6/'RSSFDE wxsensdata'!$H$8786

Row	Excel Date	Month	Day	Time	Weekday	LR EC Dry Bulb C	DHh (K x h) at Base Temp (C) 14.86500	Consumption kWh RESSFDE	Normalized Consumption RESSFDE
6	01-Apr-07	4	1	5:00:00	Sun	5.00	9.87	516792.48	0.00010985
30	02-Apr-07	4	2	5:00:00	Mon	3.10	11.77	619833.8	0.00013176
54	03-Apr-07	4	3	5:00:00	Tue	-0.30	15.17	651640.45	0.00013852
78	04-Apr-07	4	4	5:00:00	Wed	5.80	9.07	524398.32	0.00011147
102	05-Apr-07	4	5	5:00:00	Thu	7.60	7.27	491253.28	0.00010443
126	06-Apr-07	4	6	5:00:00	Fri	7.60	7.27	395161.42	8.4E-05
150	07-Apr-07	4	7	5:00:00	Sat	9.00	5.87	295383.87	6.279E-05
174	08-Apr-07	4	8	5:00:00	Sun	11.20	3.67	296909.69	6.3114E-05
198	09-Apr-07	4	9	5:00:00	Mon	9.10	5.77	391034.51	8.3122E-05
222	10-Apr-07	4	10	5:00:00	Tue	6.20	8.67	460260.1	9.7838E-05
246	11-Apr-07	4	11	5:00:00	Wed	3.50	11.37	461244.94	9.8047E-05
270	12-Apr-07	4	12	5:00:00	Thu	7.30	7.57	465088.97	9.8864E-05
294	13-Apr-07	4	13	5:00:00	Fri	8.20	6.67	434937.97	9.2455E-05
318	14-Apr-07	4	14	5:00:00	Sat	8.20	6.67	465852.27	9.9026E-05
342	15-Apr-07	4	15	5:00:00	Sun	4.40	10.47	470757.65	0.00010007
366	16-Apr-07	4	16	5:00:00	Mon	7.80	7.07	386735.86	8.2209E-05
390	17-Apr-07	4	17	5:00:00	Tue	5.20	9.67	453479.56	9.6396E-05
414	18-Apr-07	4	18	5:00:00	Wed	4.40	10.47	492154.07	0.00010462
438	19-Apr-07	4	19	5:00:00	Thu	4.60	10.27	479576.66	0.00010194
462	20-Apr-07	4	20	5:00:00	Fri	3.70	11.17	417920.75	8.8838E-05
486	21-Apr-07	4	21	5:00:00	Sat	5.40	9.47	406919.44	8.6499E-05
510	22-Apr-07	4	22	5:00:00	Sun	9.50	5.37	386902.38	8.2244E-05
534	23-Apr-07	4	23	5:00:00	Mon	5.90	8.97	355047.65	7.5473E-05
558	24-Apr-07	4	24	5:00:00	Tue	9.90	4.97	274603.32	5.8373E-05
582	25-Apr-07	4	25	5:00:00	Wed	6.90	7.97	357484.23	7.5991E-05
606	26-Apr-07	4	26	5:00:00	Thu	8.70	6.17	383673.04	8.1558E-05
630	27-Apr-07	4	27	5:00:00	Fri	9.60	5.27	367348.08	7.8087E-05
654	28-Apr-07	4	28	5:00:00	Sat	7.20	7.67	430627.23	9.1539E-05
678	29-Apr-07	4	29	5:00:00	Sun	7.80	7.07	348707.46	7.4125E-05
702	30-Apr-07	4	30	5:00:00	Mon	6.90	7.97	398813.58	8.4776E-05
726	01-May-07	5	1	5:00:00	Tue	8.00	6.87	327172.38	6.9547E-05
750	02-May-07	5	2	5:00:00	Wed	9.80	5.07	380059.11	8.0789E-05
774	03-May-07	5	3	5:00:00	Thu	7.30	7.57	390076.17	8.2919E-05
798	04-May-07	5	4	5:00:00	Fri	6.60	8.27	384141.05	8.1657E-05
822									805E-05
846									703E-05
870									378E-05
894									528E-05
918									624E-05
942									983E-05
966									792E-05
990									121E-05
1014	13-May-07	5	13	5:00:00	Sun	9.60	5.27	288600.86	6.1348E-05
1038	14-May-07	5	14	5:00:00	Mon	9.20	5.67	338694.48	7.1996E-05
1062	15-May-07	5	15	5:00:00	Tue	9.10	5.77	227480.85	4.8356E-05
1086	16-May-07	5	16	5:00:00	Wed	10.90	3.97	222351.42	4.7265E-05
1110	17-May-07	5	17	5:00:00	Thu	8.10	6.77	260694.06	5.5416E-05
1134	18-May-07	5	18	5:00:00	Fri	8.00	6.87	274096.95	5.8265E-05





RSSFDE wxsensdata 0300 | RSSFDE wxsensdata 0400 | **RSSFDE wxsensdata 0500** | RSSFDE wxsensdata 0

Hourly observations of BPT:

At 0500, BPT = 14.9°C

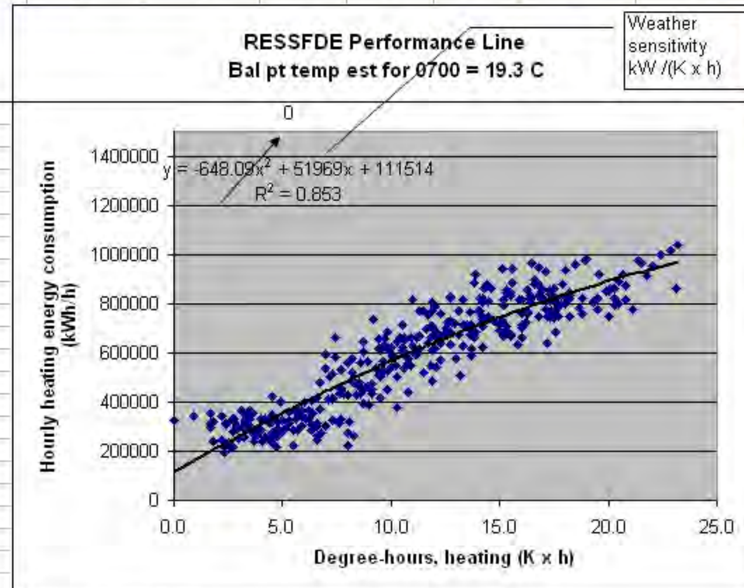
Microsoft Excel - RESSFDE bal temp F0708.xls

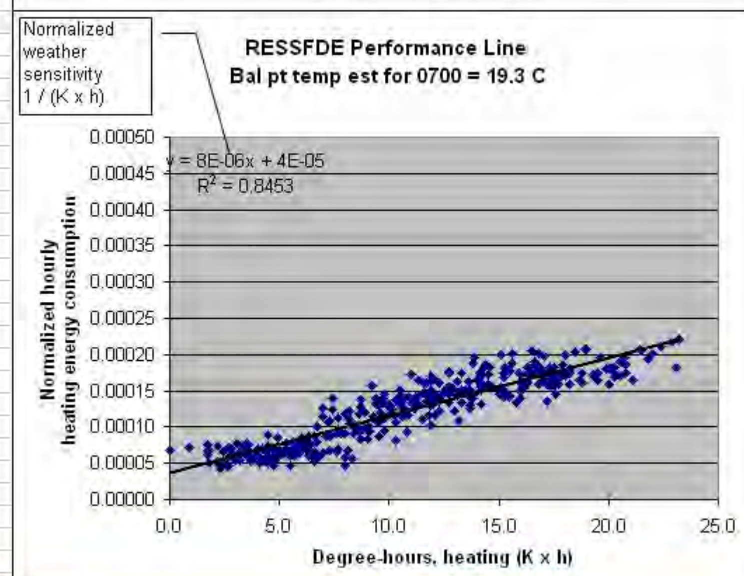
File Edit View Insert Format Tools Data Window PI Help

I8 =H8/'RSSFDE wxsensdata'!$H$8786

	A	B	C	D	E	F	G	H	I
1	Excel Date	Month	Day	Time	Weekday	LR EC Dry Bulb C	DHh (K x h) at Base Temp (C) 19.30000	Consumption kWh RESSFDE	Normalized Consumption RESSFDE
8	01-Apr-07	4	1	7:00:00	Sun	5.10	14.20	744299.56	0.00015822
32	02-Apr-07	4	2	7:00:00	Mon	2.70	16.60	892701.11	0.00018976
56	03-Apr-07	4	3	7:00:00	Tue	0.40	18.90	975255.74	0.00020731
80	04-Apr-07	4	4	7:00:00	Wed	5.40	13.90	918300.58	0.0001952
104	05-Apr-07	4	5	7:00:00	Thu	8.30	11.00	813215.33	0.00017287
128	06-Apr-07	4	6	7:00:00	Fri	7.30	12.00	616005.07	0.00013094
152	07-Apr-07	4	7	7:00:00	Sat	9.50	9.80	524245.64	0.00011144
176	08-Apr-07	4	8	7:00:00	Sun	9.90	9.40	507852.38	0.00010795
200	09-Apr-07	4	9	7:00:00	Mon	8.80	10.50	610111.37	0.00012969
224	10-Apr-07	4	10	7:00:00	Tue	5.30	14.00	770594.87	0.00016381
248	11-Apr-07	4	11	7:00:00	Wed	4.80	14.50	809789.99	0.00017214
272	12-Apr-07	4	12	7:00:00	Thu	7.30	12.00	787595.91	0.00016742
296	13-Apr-07	4	13	7:00:00	Fri	8.00	11.30	772742.83	0.00016426
632	27-Apr-07	4	27	7:00:00	Fri	9.50	9.80	685884.62	0.0001458
656	28-Apr-07	4	28	7:00:00	Sat	8.10	11.20	591769.6	0.00012579
680	29-Apr-07	4	29	7:00:00	Sun	8.20	11.10	593902.98	0.00012625
704	30-Apr-07	4	30	7:00:00	Mon	7.40	11.90	708410.16	0.00015059
728	01-May-07	5	1	7:00:00	Tue	8.00	11.30	669997.99	0.00014242
752	02-May-07	5	2	7:00:00	Wed	9.90	9.40	653635.1	0.00013894
776	03-May-07	5	3	7:00:00	Thu	7.50	11.80	662862.36	0.00014091
1016	13-May-07	5	13	7:00:00	Sun	9.50	9.80	451230.89	9.5918E-05
1040	14-May-07	5	14	7:00:00	Mon	9.20	10.10	583851.9	0.00012411
1064	15-May-07	5	15	7:00:00	Tue	11.00	8.30	480019.68	0.00010204
1088	16-May-07	5	16	7:00:00	Wed	12.00	7.30	419113.76	8.9091E-05
1112	17-May-07	5	17	7:00:00	Thu	10.00	9.30	538413.17	0.00011445
1136	18-May-07	5	18	7:00:00	Fri	10.20	9.10	434798.21	9.2425E-05

For hours 0600, 0700, and 0800, it was not possible to minimize α' below a certain value which would remain constant no matter how much the base temperature was raised above 18.2, 19.3, or 20.1 degrees respectively. This may be related to the installed electrical heating capacity for RESSFDE reaching a limit at breakfast time in BC. A similar effect was observed for the 1700 data set.





Hourly observations of BPT:

At 0700, BPT = 19.3°C

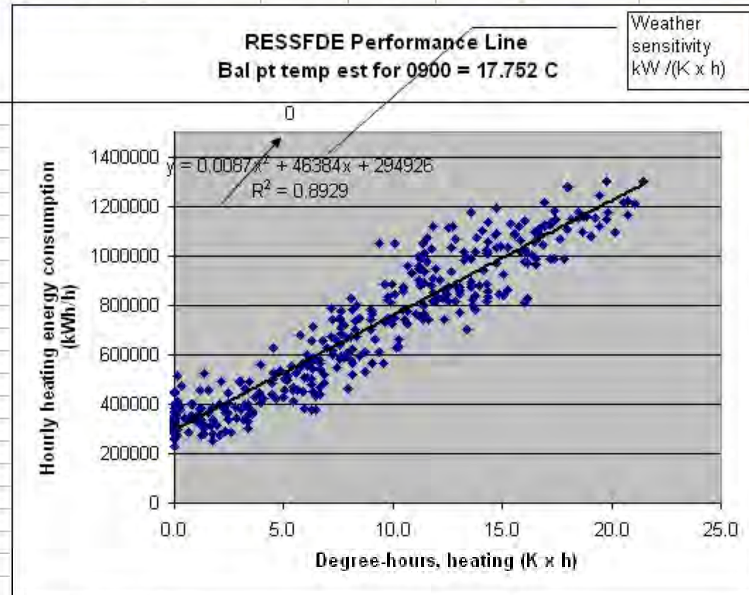
RSSFDE wxsensdata 0500 | RSSFDE wxsensdata 0600 | **RSSFDE wxsensdata 0700** | RSSFDE wxsensdata 0

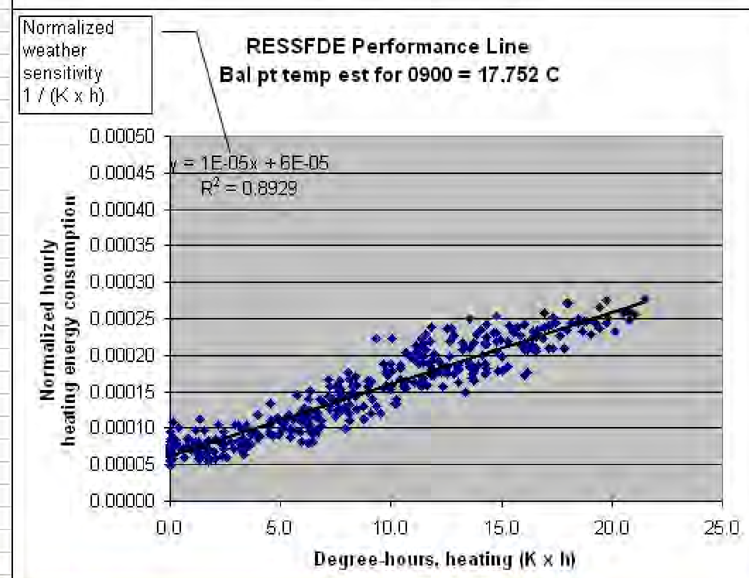
Filter Mode NUM

Microsoft Excel - RESSFDE bal temp F0708.xls

I10 =H10/'RSSFDE wxsensdata'!$H$8786

	Excel Date	Month	Day	Time	Weekday	LR EC Dry Bulb C	DHh (K×h) at Base Temp (C) 17.75200	Consumption kWh RESSFDE	Normalized Consumption RESSFDE
10	01-Apr-07	4	1	9:00:00	Sun	5.40	12.35	862175.41	0.00018327
34	02-Apr-07	4	2	9:00:00	Mon	3.40	14.35	1008352.35	0.00021435
58	03-Apr-07	4	3	9:00:00	Tue	4.10	13.65	796102.85	0.00016923
82	04-Apr-07	4	4	9:00:00	Wed	6.60	11.15	960677.77	0.00020421
106	05-Apr-07	4	5	9:00:00	Thu	10.50	7.25	739814.3	0.00015726
130	06-Apr-07	4	6	9:00:00	Fri	10.40	7.35	658928.65	0.00014007
154	07-Apr-07	4	7	9:00:00	Sat	12.00	5.75	680412.08	0.00014464
178	08-Apr-07	4	8	9:00:00	Sun	10.20	7.55	740306.7	0.00015737
202	09-Apr-07	4	9	9:00:00	Mon	8.70	9.05	761712.86	0.00016192
226	10-Apr-07	4	10	9:00:00	Tue	8.80	8.95	701791.83	0.00014918
250	11-Apr-07	4	11	9:00:00	Wed	6.30	11.45	763177.25	0.00016223
274	12-Apr-07	4	12	9:00:00	Thu	9.70	8.05	673941.72	0.00014326
298	13-Apr-07	4	13	9:00:00	Fri	6.40	11.35	797857.26	0.0001696
322	14-Apr-07	4	14	9:00:00	Sat	9.40	8.35	800335.28	0.00017013
346	15-Apr-07	4	15	9:00:00	Sun	7.80	9.95	884147.32	0.00018794
370	16-Apr-07	4	16	9:00:00	Mon	7.70	10.05	745942.09	0.00015857
394	17-Apr-07	4	17	9:00:00	Tue	6.40	11.35	742444.52	0.00015782
418	18-Apr-07	4	18	9:00:00	Wed	7.10	10.65	727073.01	0.00015455
442	19-Apr-07	4	19	9:00:00	Thu	8.00	9.75	821912.35	0.00017471
466	20-Apr-07	4	20	9:00:00	Fri	7.50	10.25	659807.91	0.00014026
490	21-Apr-07	4	21	9:00:00	Sat	8.70	9.05	773686.04	0.00016446
514	22-Apr-07	4	22	9:00:00	Sun	10.00	7.75	719781.04	0.000153
538	23-Apr-07	4	23	9:00:00	Mon	10.90	6.85	517219.42	0.00010995
562	24-Apr-07	4	24	9:00:00	Tue	9.70	8.05	573905.2	0.000122
586	25-Apr-07	4	25	9:00:00	Wed	9.30	8.45	594377.07	0.00012635
610	26-Apr-07	4	26	9:00:00	Thu	9.30	8.45	748487.85	0.00015911
634	27-Apr-07	4	27	9:00:00	Fri	10.10	7.65	591526.53	0.00012574
658	28-Apr-07	4	28	9:00:00	Sat	9.60	8.15	622562.75	0.00013234
682	29-Apr-07	4	29	9:00:00	Sun	9.90	7.85	665725.31	0.00014151
706	30-Apr-07	4	30	9:00:00	Mon	10.00	7.75	586539.38	0.00012468
730	01-May-07	5	1	9:00:00	Tue	8.40	9.35	611133.3	0.00012991
754	02-May-07	5	2	9:00:00	Wed	10.20	7.55	639848.43	0.00013601
778	03-May-07	5	3	9:00:00	Thu	7.60	10.15	624946.49	0.00013285
802									014357
826									012887
850									001453
874									012129
898									010407
922									011329
946									012151
970									010762
994	12-May-07	5	12	9:00:00	Sat	10.90	6.85	484184.88	0.00010292
1018	13-May-07	5	13	9:00:00	Sun	11.10	6.65	576810.38	0.00012261
1042	14-May-07	5	14	9:00:00	Mon	11.90	5.85	565951.92	0.0001203
1066	15-May-07	5	15	9:00:00	Tue	15.00	2.75	387178.94	8.2303E-05
1090	16-May-07	5	16	9:00:00	Wed	13.90	3.85	443865.91	9.4353E-05
1114	17-May-07	5	17	9:00:00	Thu	11.30	6.45	433008.4	9.2045E-05
1138	18-May-07	5	18	9:00:00	Fri	13.20	4.55	501263	0.00010655





RSSFDE wxsensdata 0700 / RSSFDE wxsensdata 0800 / RSSFDE wxsensdata 0900 / RSSFDE wxsensdata 1(

Hourly observations of BPT:

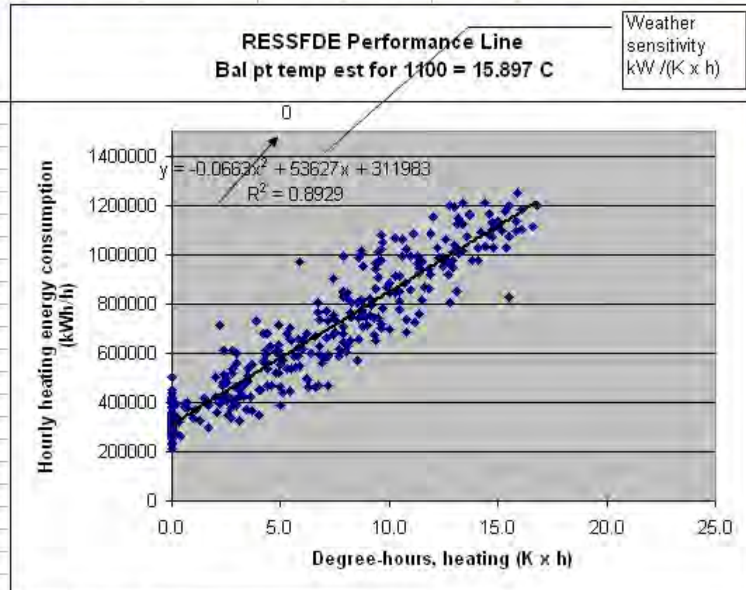
At 0900, BPT = 17.8°C

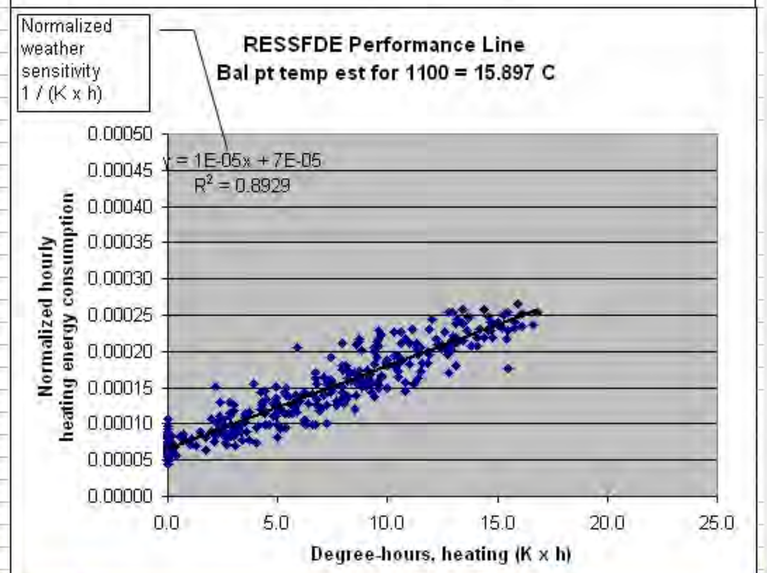
Microsoft Excel - RESSFDE bal temp F0708.xls

I12 =H12/'RSSFDE wxsensdata'!$H$8786

1	Excel Date	Month	Day	Time	Weekday	LR EC Dry Bulb C	DHh (K x h) at Base Temp (C) 15.89700	Consumption kWh RESSFDE	Normalized Consumption RESSFDE
12	01-Apr-07	4	1	11:00:00	Sun	6.40	9.50	742952.17	0.00015793
36	02-Apr-07	4	2	11:00:00	Mon	4.90	11.00	856822.86	0.00018214
60	03-Apr-07	4	3	11:00:00	Tue	6.50	9.40	648734.23	0.0001379
84	04-Apr-07	4	4	11:00:00	Wed	8.00	7.90	848145.3	0.00018029
108	05-Apr-07	4	5	11:00:00	Thu	10.60	5.30	534790.89	0.00011368
132	06-Apr-07	4	6	11:00:00	Fri	13.50	2.40	608707.59	0.00012939
156	07-Apr-07	4	7	11:00:00	Sat	13.70	2.20	712439.7	0.00015144
180	08-Apr-07	4	8	11:00:00	Sun	10.40	5.50	651291.73	0.00013845
204	09-Apr-07	4	9	11:00:00	Mon	9.70	6.20	676735.2	0.00014385
228	10-Apr-07	4	10	11:00:00	Tue	9.30	6.60	463943.96	9.8621E-05
252	11-Apr-07	4	11	11:00:00	Wed	7.90	8.00	602863.12	0.00012815
276	12-Apr-07	4	12	11:00:00	Thu	11.10	4.80	521491.91	0.00011085
300	13-Apr-07	4	13	11:00:00	Fri	6.70	9.20	793437.29	0.00016866
324	14-Apr-07	4	14	11:00:00	Sat	10.30	5.60	590258.53	0.00012547
348	15-Apr-07	4	15	11:00:00	Sun	9.10	6.80	733254.31	0.00015587
372	16-Apr-07	4	16	11:00:00	Mon	8.40	7.50	734048.73	0.00015604
396	17-Apr-07	4	17	11:00:00	Tue	9.00	6.90	559651.95	0.00011897
420	18-Apr-07	4	18	11:00:00	Wed	8.20	7.70	588663.49	0.00012513
444	19-Apr-07	4	19	11:00:00	Thu	8.70	7.20	470117.23	9.9933E-05
468	20-Apr-07	4	20	11:00:00	Fri	9.60	6.30	488363.09	0.00010381
492	21-Apr-07	4	21	11:00:00	Sat	12.00	3.90	727688.5	0.00015469
516	22-Apr-07	4	22	11:00:00	Sun	12.40	3.50	536763.91	0.0001141
540	23-Apr-07	4	23	11:00:00	Mon	13.40	2.50	428513.03	9.1089E-05
564	24-Apr-07	4	24	11:00:00	Tue	9.70	6.20	496869.84	0.00010562
588	25-Apr-07	4	25	11:00:00	Wed	10.00	5.90	547119.11	0.0001163
612	26-Apr-07	4	26	11:00:00	Thu	9.90	6.00	648292.81	0.00013781
636	27-Apr-07	4	27	11:00:00	Fri	11.00	4.90	519124.29	0.00011035
660	28-Apr-07	4	28	11:00:00	Sat	10.90	5.00	550540.96	0.00011703
684	29-Apr-07	4	29	11:00:00	Sun	11.00	4.90	634279.62	0.00013483
708	30-Apr-07	4	30	11:00:00	Mon	12.40	3.50	536313.98	0.000114
732	01-May-07	5	1	11:00:00	Tue	9.60	6.30	464194.06	9.8674E-05
756	02-May-07	5	2	11:00:00	Wed	10.90	5.00	462637.91	9.8343E-05
780	03-May-07	5	3	11:00:00	Thu	11.60	4.30	590476.3	0.00012552
804	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]471E-05
828	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible].000128
852	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]0012708
876	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]108E-05
900	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]928E-05
924	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]701E-05
948	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]459E-05
972	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]351E-05
996	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]0062E-05
1020	13-May-07	5	13	11:00:00	Sun	11.60	4.30	608153.44	0.00012928
1044	14-May-07	5	14	11:00:00	Mon	12.90	3.00	390362.58	8.298E-05
1068	15-May-07	5	15	11:00:00	Tue	16.60	0.00	289553	6.155E-05
1092	16-May-07	5	16	11:00:00	Wed	15.30	0.60	394242.57	8.3804E-05
1116	17-May-07	5	17	11:00:00	Thu	13.40	2.50	403942.57	8.5866E-05
1140	18-May-07	5	18	11:00:00	Fri	16.80	0.00	381759.65	8.1151E-05

RSSFDE wxsensdata 0900 / RSSFDE wxsensdata 1000 / **RSSFDE wxsensdata 1100** / RSSFDE wxsensdata 1…





Hourly observations of BPT:

At 1100, BPT = 15.9°C

Microsoft Excel - RESSFDE bal temp F0708.xls

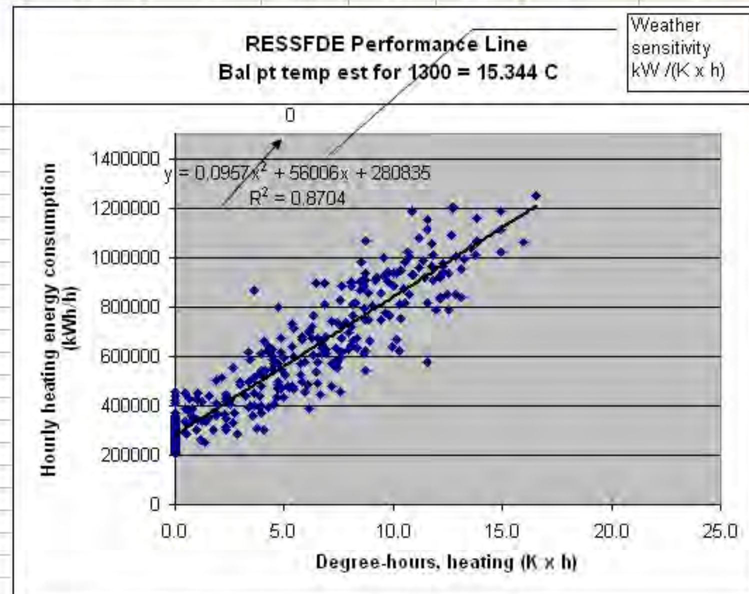
File Edit View Insert Format Tools Data Window PI Help

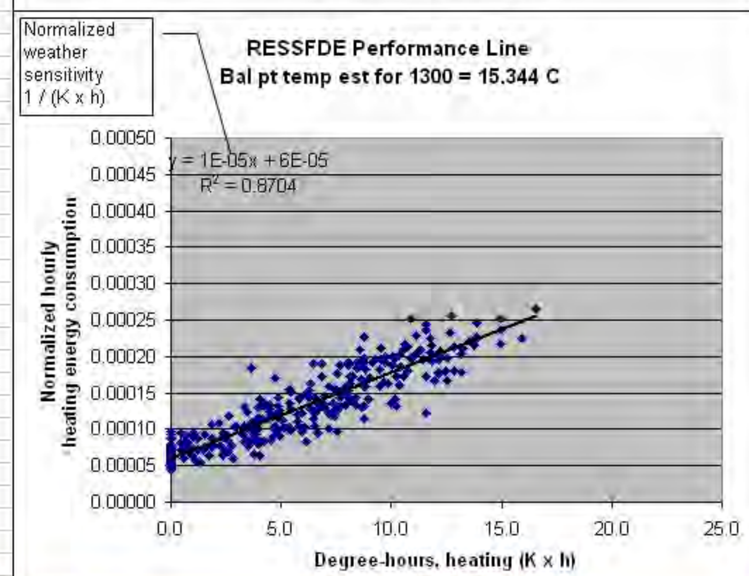
I14 | =H14/'RSSFDE wxsensdata'!$H$8786

1	Excel Date	Month	Day	Time	Weekday	LR EC Dry Bulb C	DHh (K×h) at Base Temp (C) 15.34400	Consumption kWh RESSFDE	Normalized Consumption RESSFDE
14	01-Apr-07	4	1	13:00:00	Sun	8.00	7.34	634031.34	0.00013478
38	02-Apr-07	4	2	13:00:00	Mon	3.80	11.54	575305.41	0.00012229
62	03-Apr-07	4	3	13:00:00	Tue	7.90	7.44	578443.24	0.00012296
86	04-Apr-07	4	4	13:00:00	Wed	7.70	7.64	617518.37	0.00013127
110	05-Apr-07	4	5	13:00:00	Thu	11.50	3.84	440203.57	9.3574E-05
134	06-Apr-07	4	6	13:00:00	Fri	14.90	0.44	448336.28	9.5303E-05
158	07-Apr-07	4	7	13:00:00	Sat	12.40	2.94	486761.76	0.00010347
182	08-Apr-07	4	8	13:00:00	Sun	12.00	3.34	616628.31	0.00013108
206	09-Apr-07	4	9	13:00:00	Mon	11.50	3.84	530902.84	0.00011285
230	10-Apr-07	4	10	13:00:00	Tue	11.10	4.24	395544.51	8.4081E-05
254	11-Apr-07	4	11	13:00:00	Wed	8.70	6.64	444484.21	9.4484E-05
278	12-Apr-07	4	12	13:00:00	Thu	10.30	5.04	526873.87	0.000112
302	13-Apr-07	4	13	13:00:00	Fri	8.00	7.34	566356.49	0.00012039
326	14-Apr-07	4	14	13:00:00	Sat	11.40	3.94	542897.21	0.0001154
350	15-Apr-07	4	15	13:00:00	Sun	10.60	4.74	568093.74	0.00012076
374	16-Apr-07	4	16	13:00:00	Mon	7.00	8.34	671870.45	0.00014282
398	17-Apr-07	4	17	13:00:00	Tue	10.40	4.94	432883.3	9.2018E-05
422	18-Apr-07	4	18	13:00:00	Wed	10.60	4.74	472633.62	0.00010047
446	19-Apr-07	4	19	13:00:00	Thu	9.90	5.44	466735.09	9.9214E-05
470	20-Apr-07	4	20	13:00:00	Fri	11.40	3.94	372451.9	7.9172E-05
494	21-Apr-07	4	21	13:00:00	Sat	11.50	3.84	529563.83	0.00011257
518	22-Apr-07	4	22	13:00:00	Sun	13.50	1.84	409577.13	8.7064E-05
542	23-Apr-07	4	23	13:00:00	Mon	14.70	0.64	332444.97	7.0668E-05
566	24-Apr-07	4	24	13:00:00	Tue	10.60	4.74	493831.05	0.00010497
590	25-Apr-07	4	25	13:00:00	Wed	10.60	4.74	468450.87	9.9579E-05
614	26-Apr-07	4	26	13:00:00	Thu	10.20	5.14	481460.83	0.00010234
638	27-Apr-07	4	27	13:00:00	Fri	11.70	3.64	452473.52	9.6183E-05
662	28-Apr-07	4	28	13:00:00	Sat	11.40	3.94	478368.21	0.00010169
686	29-Apr-07	4	29	13:00:00	Sun	11.70	3.64	398721.29	8.4756E-05
710	30-Apr-07	4	30	13:00:00	Mon	13.10	2.24	362626.71	7.7084E-05
734	01-May-07	5	1	13:00:00	Tue	10.10	5.24	472175.15	0.00010037
758	02-May-07	5	2	13:00:00	Wed	11.90	3.44	398345.39	8.4677E-05
782	03-May-07	5	3	13:00:00	Thu	9.20	6.14	388971.46	8.2684E-05
806	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	07E-05
830									010923
854									012595
878									66E-05
902									26E-05
926									34E-05
950									88E-05
974									79E-05
998	12-May-07	5	12	13:00:00	Sat	13.00	2.34	345155.1	7.337E-05
1022	13-May-07	5	13	13:00:00	Sun	13.00	2.34	447393.86	9.5103E-05
1046	14-May-07	5	14	13:00:00	Mon	14.30	1.04	342949.81	7.2901E-05
1070	15-May-07	5	15	13:00:00	Tue	18.50	0.00	236101.42	5.0188E-05
1094	16-May-07	5	16	13:00:00	Wed	17.30	0.00	287350.82	6.1082E-05
1118	17-May-07	5	17	13:00:00	Thu	15.70	0.00	345889.96	7.3526E-05
1142	18-May-07	5	18	13:00:00	Fri	16.60	0.00	361309.69	7.6804E-05

Hourly observations of BPT:

At 1300, BPT = 15.3°C





RSSFDE wxsensdata 1100 | RSSFDE wxsensdata 1200 | **RSSFDE wxsensdata 1300** | RSSFDE wxsensdata 1

Filter Mode NUM

Microsoft Excel - RESSFDE bal temp F0708.xls

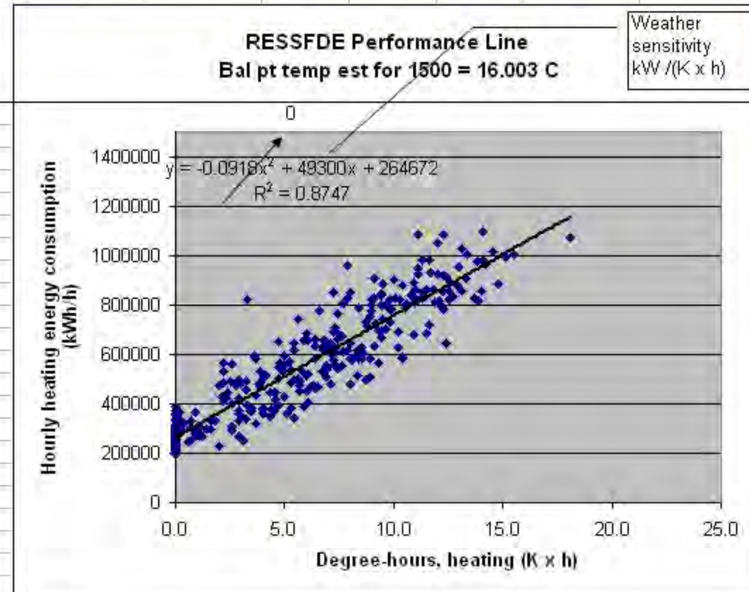
I16 =H16/'RSSFDE wxsensdata'!$H$8786

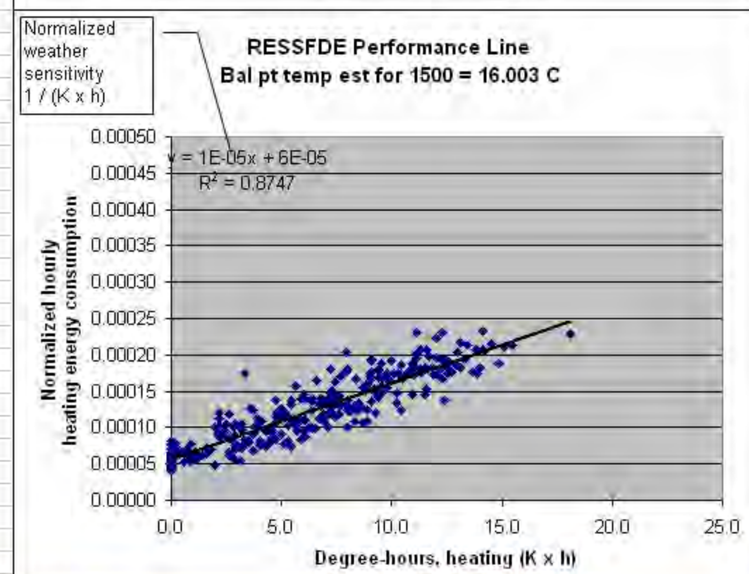
1	Excel Date	Month	Day	Time	Weekday	LR EC Dry Bulb C	DHh (K×h) at Base Temp (C) 16.00300	Consumption kWh RESSFDE	Normalized Consumption RESSFDE
16	01-Apr-07	4	1	15:00:00	Sun	8.90	7.10	644798.82	0.00013707
40	02-Apr-07	4	2	15:00:00	Mon	7.10	8.90	509278.66	0.00010826
64	03-Apr-07	4	3	15:00:00	Tue	9.70	6.30	471383.49	0.0001002
88	04-Apr-07	4	4	15:00:00	Wed	8.70	7.30	621732.85	0.00013216
112	05-Apr-07	4	5	15:00:00	Thu	11.40	4.60	414139.5	8.8034E-05
136	06-Apr-07	4	6	15:00:00	Fri	13.70	2.30	420917.64	8.9475E-05
160	07-Apr-07	4	7	15:00:00	Sat	14.00	2.00	472181.67	0.00010037
184	08-Apr-07	4	8	15:00:00	Sun	12.10	3.90	532107.98	0.00011311
208	09-Apr-07	4	9	15:00:00	Mon	11.30	4.70	502716.78	0.00010686
232	10-Apr-07	4	10	15:00:00	Tue	11.70	4.30	444975.67	9.4589E-05
256	11-Apr-07	4	11	15:00:00	Wed	10.30	5.70	471090.94	0.00010014
280	12-Apr-07	4	12	15:00:00	Thu	11.40	4.60	442559.88	9.4075E-05
304	13-Apr-07	4	13	15:00:00	Fri	7.90	8.10	576351.89	0.00012252
328	14-Apr-07	4	14	15:00:00	Sat	11.50	4.50	373043.25	7.9298E-05
352	15-Apr-07	4	15	15:00:00	Sun	12.40	3.60	592263.21	0.0001259
376	16-Apr-07	4	16	15:00:00	Mon	8.10	7.90	615474.14	0.00013083
400	17-Apr-07	4	17	15:00:00	Tue	10.70	5.30	484449.09	0.00010298
424	18-Apr-07	4	18	15:00:00	Wed	10.90	5.10	361475.23	7.6839E-05
448	19-Apr-07	4	19	15:00:00	Thu	10.70	5.30	384029.57	8.1633E-05
472	20-Apr-07	4	20	15:00:00	Fri	12.60	3.40	371651.78	7.9002E-05
496	21-Apr-07	4	21	15:00:00	Sat	13.10	2.90	495938	0.00010542
520	22-Apr-07	4	22	15:00:00	Sun	13.80	2.20	482663.29	0.0001026
544	23-Apr-07	4	23	15:00:00	Mon	15.60	0.40	320612.98	6.8153E-05
568	24-Apr-07	4	24	15:00:00	Tue	12.00	4.00	357963.5	7.6093E-05
592	25-Apr-07	4	25	15:00:00	Wed	10.10	5.90	389242.56	8.2742E-05
616	26-Apr-07	4	26	15:00:00	Thu	10.30	5.70	450245.77	9.5709E-05
640	27-Apr-07	4	27	15:00:00	Fri	12.30	3.70	432965.93	9.2036E-05
664	28-Apr-07	4	28	15:00:00	Sat	12.10	3.90	486361.72	0.00010339
688	29-Apr-07	4	29	15:00:00	Sun	12.10	3.90	468503.72	9.959E-05
712	30-Apr-07	4	30	15:00:00	Mon	13.10	2.90	328058.53	6.9736E-05
736	01-May-07	5	1	15:00:00	Tue	12.00	4.00	375072.69	7.9729E-05
760	02-May-07	5	2	15:00:00	Wed	10.60	5.40	342872.17	7.2885E-05
784	03-May-07	5	3	15:00:00	Thu	11.70	4.30	347485.74	7.3865E-05
808	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	…24E-05
832	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	…44E-05
856	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	…013728
880	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	…15E-05
904	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	…29E-05
928	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	…32E-05
952	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	…89E-05
976	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	…82E-05
1000	12-May-07	5	12	15:00:00	Sat	13.40	2.60	295576.81	6.2406E-05
1024	13-May-07	5	13	15:00:00	Sun	13.90	2.10	426234.34	9.0605E-05
1048	14-May-07	5	14	15:00:00	Mon	15.40	0.60	247420.51	5.2594E-05
1072	15-May-07	5	15	15:00:00	Tue	19.90	0.00	199754.14	4.2462E-05
1096	16-May-07	5	16	15:00:00	Wed	18.20	0.00	284669.03	6.0512E-05
1120	17-May-07	5	17	15:00:00	Thu	16.30	0.00	266172.33	5.658E-05
1144	18-May-07	5	18	15:00:00	Fri	17.50	0.00	281677.34	5.9876E-05

RSSFDE wxsensdata 1300 / RSSFDE wxsensdata 1400 / **RSSFDE wxsensdata 1500** / RSSFDE wxsensdata 1…

Hourly observations of BPT:

At 1500, BPT = 16.0°C



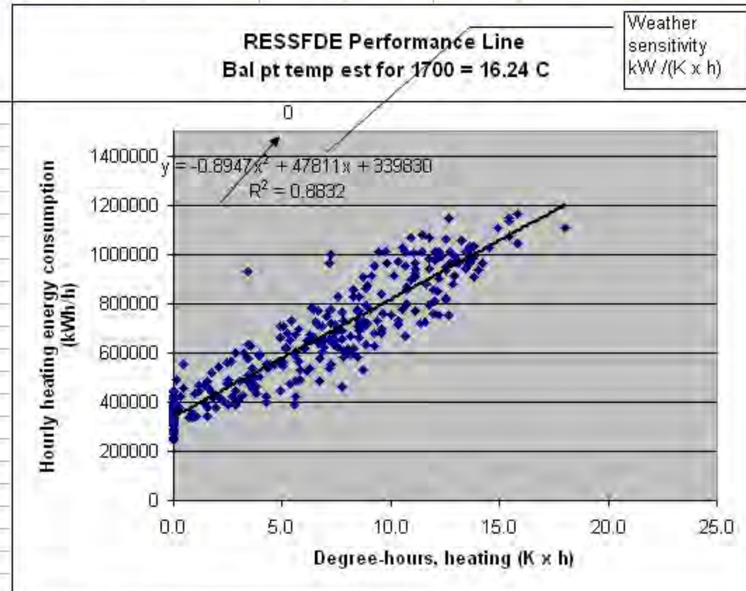


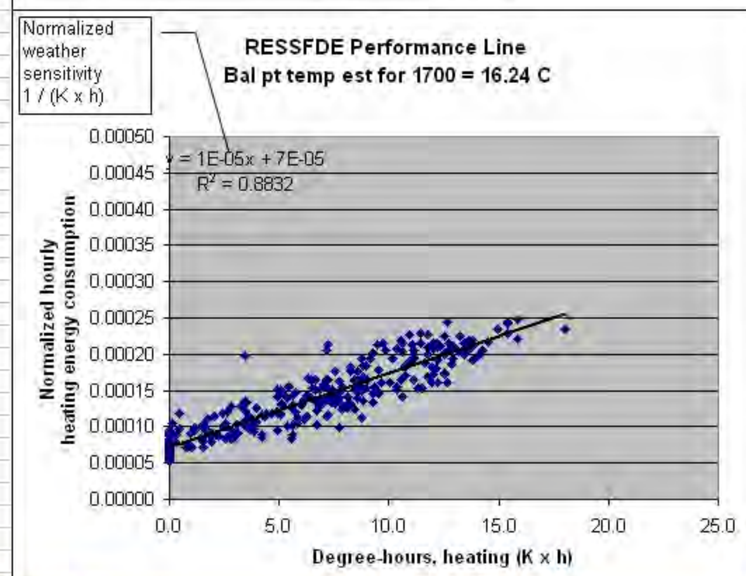
Microsoft Excel - RESSFDE bal temp F0708.xls

I18 =H18/'RSSFDE wxsensdata'!$H$8786

1	Excel Date	Month	Day	Time	Weekday	LR EC Dry Bulb C	DHh (K×h) at Base Temp (C) 16.24000	Consumption kWh RESSFDE	Normalized Consumption RESSFDE
18	01-Apr-07	4	1	17:00:00	Sun	8.80	7.44	677306.9	0.00014398
42	02-Apr-07	4	2	17:00:00	Mon	7.40	8.84	634088.48	0.00013479
66	03-Apr-07	4	3	17:00:00	Tue	9.00	7.24	551402.09	0.00011721
90	04-Apr-07	4	4	17:00:00	Wed	8.40	7.84	731430.4	0.00015548
114	05-Apr-07	4	5	17:00:00	Thu	11.90	4.34	536259.34	0.00011399
138	06-Apr-07	4	6	17:00:00	Fri	14.80	1.44	469675.88	9.9839E-05
162	07-Apr-07	4	7	17:00:00	Sat	14.70	1.54	486908.53	0.0001035
186	08-Apr-07	4	8	17:00:00	Sun	11.10	5.14	614219.79	0.00013057
210	09-Apr-07	4	9	17:00:00	Mon	10.90	5.34	652781.52	0.00013876
234	10-Apr-07	4	10	17:00:00	Tue	10.50	5.74	564513.38	0.00012
258	11-Apr-07	4	11	17:00:00	Wed	10.40	5.84	488540.26	0.00010385
282	12-Apr-07	4	12	17:00:00	Thu	11.20	5.04	550118.41	0.00011694
306	13-Apr-07	4	13	17:00:00	Fri	7.80	8.44	768780.96	0.00016342
330	14-Apr-07	4	14	17:00:00	Sat	12.60	3.64	463206.59	9.8464E-05
354	15-Apr-07	4	15	17:00:00	Sun	12.30	3.94	589216.5	0.00012525
378	16-Apr-07	4	16	17:00:00	Mon	9.10	7.14	650968.19	0.00013838
402	17-Apr-07	4	17	17:00:00	Tue	11.30	4.94	555087.14	0.000118
426	18-Apr-07	4	18	17:00:00	Wed	10.60	5.64	421404.85	8.9578E-05
450	19-Apr-07	4	19	17:00:00	Thu	10.60	5.64	486646.91	0.00010345
474	20-Apr-07	4	20	17:00:00	Fri	12.00	4.24	422201.26	8.9748E-05
498	21-Apr-07	4	21	17:00:00	Sat	13.80	2.44	556206.06	0.00011823
522	22-Apr-07	4	22	17:00:00	Sun	15.10	1.14	465016.58	9.8849E-05
546	23-Apr-07	4	23	17:00:00	Mon	15.30	0.94	431457.52	9.1715E-05
570	24-Apr-07	4	24	17:00:00	Tue	13.30	2.94	405222.84	8.6138E-05
594	25-Apr-07	4	25	17:00:00	Wed	9.50	6.74	482087.31	0.00010248
618	26-Apr-07	4	26	17:00:00	Thu	10.90	5.34	473432.72	0.00010064
642	27-Apr-07	4	27	17:00:00	Fri	12.40	3.84	433652.47	9.2182E-05
666	28-Apr-07	4	28	17:00:00	Sat	12.60	3.64	499683.54	0.00010622
690	29-Apr-07	4	29	17:00:00	Sun	12.80	3.44	478283.04	0.00010167
714	30-Apr-07	4	30	17:00:00	Mon	14.10	2.14	418026.16	8.886E-05
738	01-May-07	5	1	17:00:00	Tue	13.50	2.74	423609.41	9.0047E-05
762	02-May-07	5	2	17:00:00	Wed	12.40	3.84	459550.15	9.7687E-05
786	03-May-07	5	3	17:00:00	Thu	12.80	3.44	574084.9	0.00012203
810	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	0.00011386
834	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	…0010432
858	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	…0012681
882	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	…244E-05
906	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	…39E-05
930	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	…035E-05
954	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	…541E-05
978	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	…262E-05
1002	12-May-07	5	12	17:00:00	Sat	[illegible]	[illegible]	[illegible]	0.0001014
1026	13-May-07	5	13	17:00:00	Sun	13.60	2.64	565184.31	0.00012014
1050	14-May-07	5	14	17:00:00	Mon	15.40	0.84	353927.96	7.5235E-05
1074	15-May-07	5	15	17:00:00	Tue	18.70	0.00	287989.39	6.1218E-05
1098	16-May-07	5	16	17:00:00	Wed	17.80	0.00	344038.64	7.3132E-05
1122	17-May-07	5	17	17:00:00	Thu	16.40	0.00	356778.82	7.5841E-05
1146	18-May-07	5	18	17:00:00	Fri	15.50	0.74	334000.2	7.0999E-05

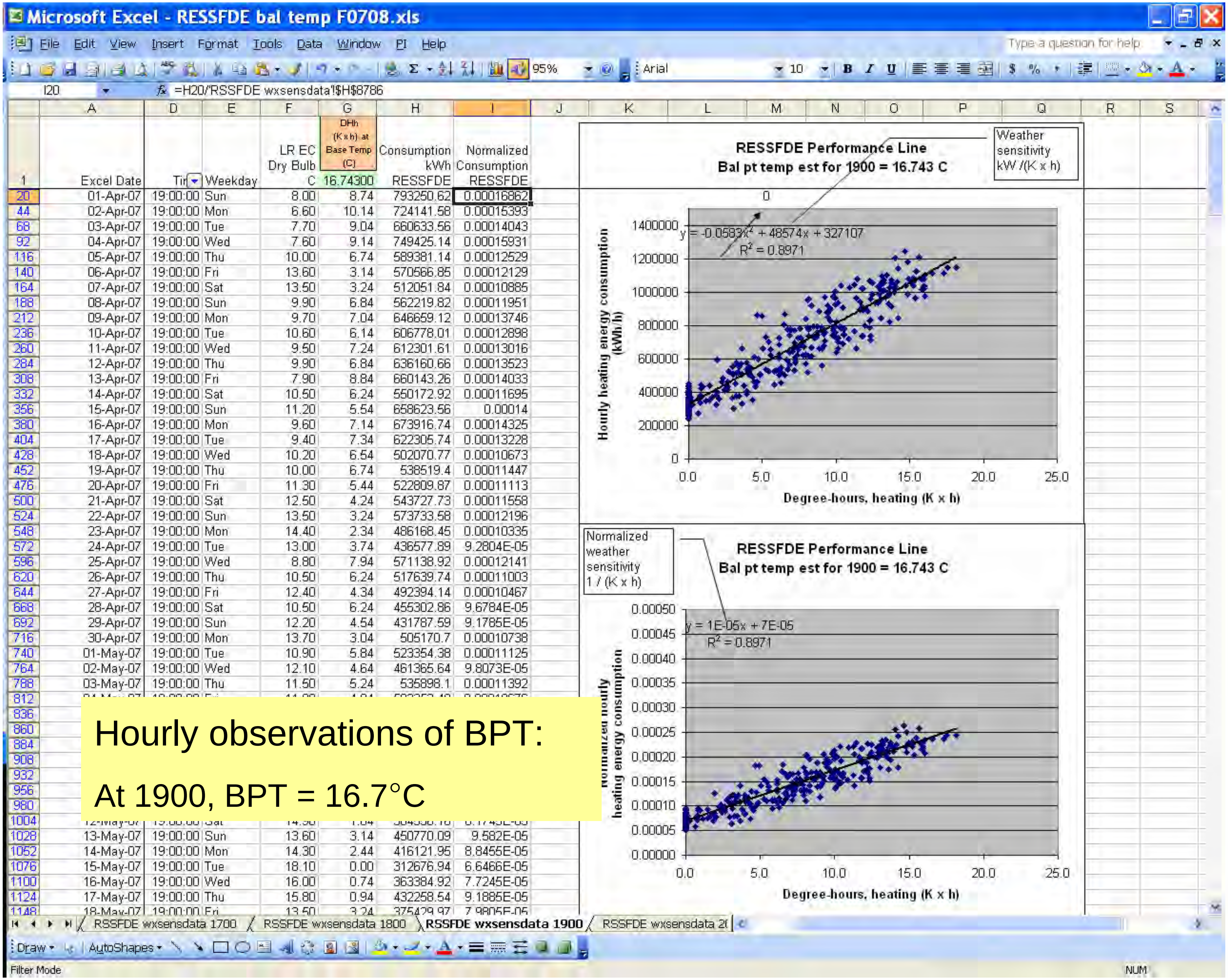
RSSFDE wxsensdata 1500 / RSSFDE wxsensdata 1600 / **RSSFDE wxsensdata 1700** / RSSFDE wxsensdata 1…





Hourly observations of BPT:

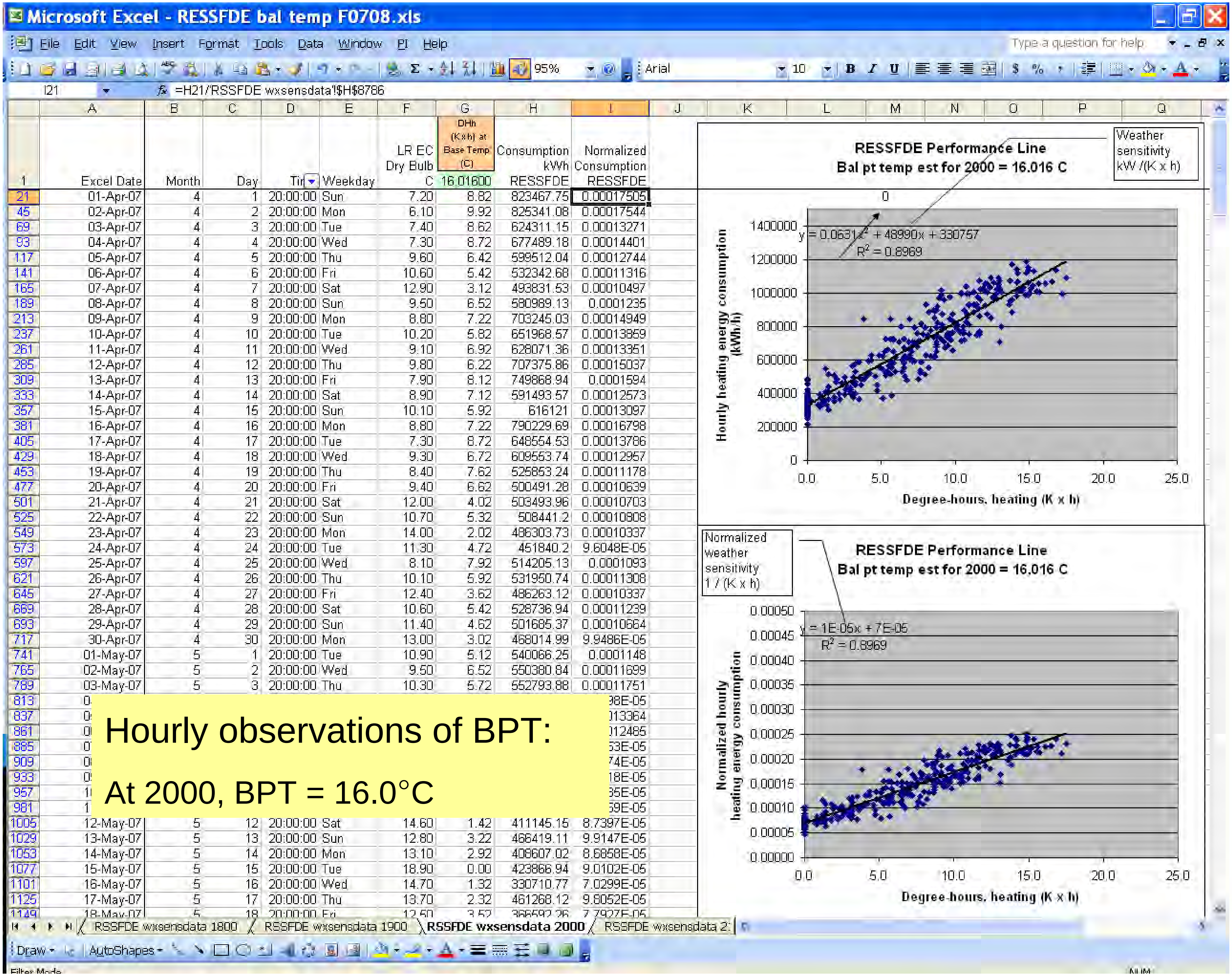
At 1700, BPT = 16.2°C



1	Excel Date	Time	Weekday	LR EC Dry Bulb C	DHh (K x h) at Base Temp (C) 16.74300	Consumption kWh RESSFDE	Normalized Consumption RESSFDE
20	01-Apr-07	19:00:00	Sun	8.00	8.74	793250.62	0.00016862
44	02-Apr-07	19:00:00	Mon	6.60	10.14	724141.58	0.00015393
68	03-Apr-07	19:00:00	Tue	7.70	9.04	660633.56	0.00014043
92	04-Apr-07	19:00:00	Wed	7.60	9.14	749425.14	0.00015931
116	05-Apr-07	19:00:00	Thu	10.00	6.74	589381.14	0.00012529
140	06-Apr-07	19:00:00	Fri	13.60	3.14	570566.85	0.00012129
164	07-Apr-07	19:00:00	Sat	13.50	3.24	512051.84	0.00010885
188	08-Apr-07	19:00:00	Sun	9.90	6.84	562219.82	0.00011951
212	09-Apr-07	19:00:00	Mon	9.70	7.04	646659.12	0.00013746
236	10-Apr-07	19:00:00	Tue	10.60	6.14	606778.01	0.00012898
260	11-Apr-07	19:00:00	Wed	9.50	7.24	612301.61	0.00013016
284	12-Apr-07	19:00:00	Thu	9.90	6.84	636160.66	0.00013523
308	13-Apr-07	19:00:00	Fri	7.90	8.84	660143.26	0.00014033
332	14-Apr-07	19:00:00	Sat	10.50	6.24	550172.92	0.00011695
356	15-Apr-07	19:00:00	Sun	11.20	5.54	658623.56	0.00014
380	16-Apr-07	19:00:00	Mon	9.60	7.14	673916.74	0.00014325
404	17-Apr-07	19:00:00	Tue	9.40	7.34	622305.74	0.00013228
428	18-Apr-07	19:00:00	Wed	10.20	6.54	502070.77	0.00010673
452	19-Apr-07	19:00:00	Thu	10.00	6.74	538519.4	0.00011447
476	20-Apr-07	19:00:00	Fri	11.30	5.44	522809.87	0.00011113
500	21-Apr-07	19:00:00	Sat	12.50	4.24	543727.73	0.00011558
524	22-Apr-07	19:00:00	Sun	13.50	3.24	573733.58	0.00012196
548	23-Apr-07	19:00:00	Mon	14.40	2.34	486168.45	0.00010335
572	24-Apr-07	19:00:00	Tue	13.00	3.74	436577.89	9.2804E-05
596	25-Apr-07	19:00:00	Wed	8.80	7.94	571138.92	0.00012141
620	26-Apr-07	19:00:00	Thu	10.50	6.24	517639.74	0.00011003
644	27-Apr-07	19:00:00	Fri	12.40	4.34	492394.14	0.00010467
668	28-Apr-07	19:00:00	Sat	10.50	6.24	455302.86	9.6784E-05
692	29-Apr-07	19:00:00	Sun	12.20	4.54	431787.59	9.1785E-05
716	30-Apr-07	19:00:00	Mon	13.70	3.04	505170.7	0.00010738
740	01-May-07	19:00:00	Tue	10.90	5.84	523354.38	0.00011125
764	02-May-07	19:00:00	Wed	12.10	4.64	461365.64	9.8073E-05
788	03-May-07	19:00:00	Thu	11.50	5.24	535898.1	0.00011392
1028	13-May-07	19:00:00	Sun	13.60	3.14	450770.09	9.582E-05
1052	14-May-07	19:00:00	Mon	14.30	2.44	416121.95	8.8455E-05
1076	15-May-07	19:00:00	Tue	18.10	0.00	312676.94	6.6466E-05
1100	16-May-07	19:00:00	Wed	16.00	0.74	363384.92	7.7245E-05
1124	17-May-07	19:00:00	Thu	15.80	0.94	432258.54	9.1885E-05
1148	18-May-07	19:00:00	Fri	13.50	3.24	375429.97	7.9805E-05

Hourly observations of BPT:

At 1900, BPT = 16.7°C



Microsoft Excel - RESSFDE bal temp F0708.xls

I21 =H21/'RSSFDE wxsensdata'!$H$8786

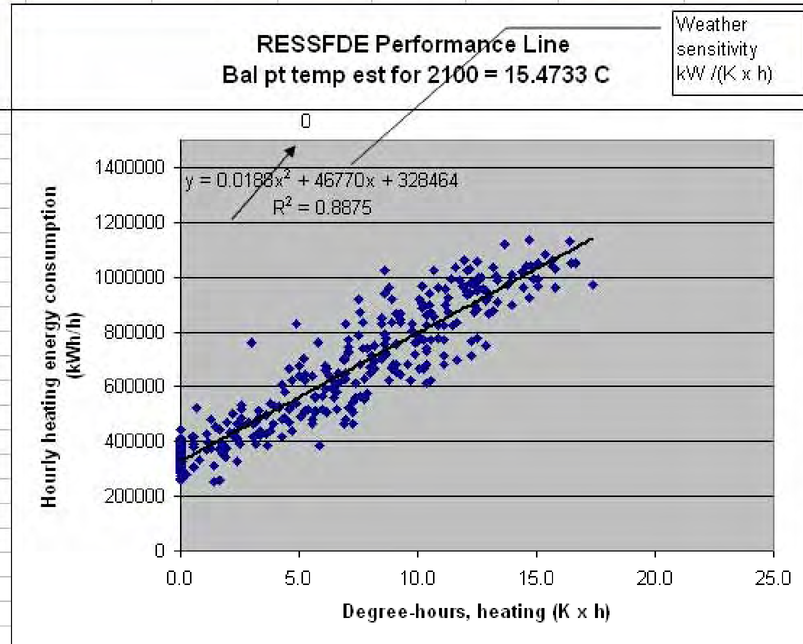
Row	Excel Date	Month	Day	Time	Weekday	LR EC Dry Bulb C	DHh (K×h) at Base Temp (C) 16.01600	Consumption kWh RESSFDE	Normalized Consumption RESSFDE
21	01-Apr-07	4	1	20:00:00	Sun	7.20	8.82	823467.75	0.00017505
45	02-Apr-07	4	2	20:00:00	Mon	6.10	9.92	825341.08	0.00017544
69	03-Apr-07	4	3	20:00:00	Tue	7.40	8.62	624311.15	0.00013271
93	04-Apr-07	4	4	20:00:00	Wed	7.30	8.72	677489.18	0.00014401
117	05-Apr-07	4	5	20:00:00	Thu	9.60	6.42	599512.04	0.00012744
141	06-Apr-07	4	6	20:00:00	Fri	10.60	5.42	532342.68	0.00011316
165	07-Apr-07	4	7	20:00:00	Sat	12.90	3.12	493831.53	0.00010497
189	08-Apr-07	4	8	20:00:00	Sun	9.50	6.52	580989.13	0.0001235
213	09-Apr-07	4	9	20:00:00	Mon	8.80	7.22	703245.03	0.00014949
237	10-Apr-07	4	10	20:00:00	Tue	10.20	5.82	651968.57	0.00013859
261	11-Apr-07	4	11	20:00:00	Wed	9.10	6.92	628071.36	0.00013351
285	12-Apr-07	4	12	20:00:00	Thu	9.80	6.22	707375.86	0.00015037
309	13-Apr-07	4	13	20:00:00	Fri	7.90	8.12	749868.94	0.0001594
333	14-Apr-07	4	14	20:00:00	Sat	8.90	7.12	591493.57	0.00012573
357	15-Apr-07	4	15	20:00:00	Sun	10.10	5.92	616121	0.00013097
381	16-Apr-07	4	16	20:00:00	Mon	8.80	7.22	790229.69	0.00016798
405	17-Apr-07	4	17	20:00:00	Tue	7.30	8.72	648554.53	0.00013786
429	18-Apr-07	4	18	20:00:00	Wed	9.30	6.72	609553.74	0.00012957
453	19-Apr-07	4	19	20:00:00	Thu	8.40	7.62	525853.24	0.00011178
477	20-Apr-07	4	20	20:00:00	Fri	9.40	6.62	500491.28	0.00010639
501	21-Apr-07	4	21	20:00:00	Sat	12.00	4.02	503493.96	0.00010703
525	22-Apr-07	4	22	20:00:00	Sun	10.70	5.32	508441.2	0.00010808
549	23-Apr-07	4	23	20:00:00	Mon	14.00	2.02	486303.73	0.00010337
573	24-Apr-07	4	24	20:00:00	Tue	11.30	4.72	451840.2	9.6048E-05
597	25-Apr-07	4	25	20:00:00	Wed	8.10	7.92	514205.13	0.0001093
621	26-Apr-07	4	26	20:00:00	Thu	10.10	5.92	531950.74	0.00011308
645	27-Apr-07	4	27	20:00:00	Fri	12.40	3.62	486263.12	0.00010337
669	28-Apr-07	4	28	20:00:00	Sat	10.60	5.42	528736.94	0.00011239
693	29-Apr-07	4	29	20:00:00	Sun	11.40	4.62	501685.37	0.00010664
717	30-Apr-07	4	30	20:00:00	Mon	13.00	3.02	468014.99	9.9486E-05
741	01-May-07	5	1	20:00:00	Tue	10.90	5.12	540066.25	0.0001148
765	02-May-07	5	2	20:00:00	Wed	9.50	6.52	550380.84	0.00011699
789	03-May-07	5	3	20:00:00	Thu	10.30	5.72	552793.88	0.00011751
813	0.								98E-05
837	0								013364
861	0								012485
885	0								53E-05
909	0								74E-05
933	0								18E-05
957	1								35E-05
981	1								59E-05
1005	12-May-07	5	12	20:00:00	Sat	14.60	1.42	411145.15	8.7397E-05
1029	13-May-07	5	13	20:00:00	Sun	12.80	3.22	466419.11	9.9147E-05
1053	14-May-07	5	14	20:00:00	Mon	13.10	2.92	408607.02	8.6858E-05
1077	15-May-07	5	15	20:00:00	Tue	18.90	0.00	423866.94	9.0102E-05
1101	16-May-07	5	16	20:00:00	Wed	14.70	1.32	330710.77	7.0299E-05
1125	17-May-07	5	17	20:00:00	Thu	13.70	2.32	461268.12	9.8052E-05
1149	18-May-07	5	18	20:00:00	Fri	12.50	3.52	366592.26	7.7927E-05

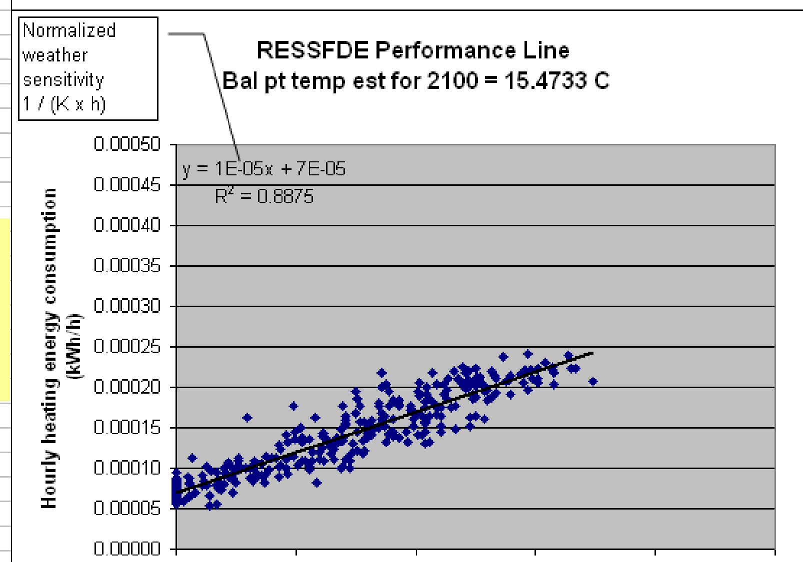
Hourly observations of BPT:

At 2000, BPT = 16.0°C

Microsoft Excel - RESSFDE bal temp.xls

Row	Excel Date	Time	Weekday	LR EC Dry Bulb C	DHh (K x h) at Base Temp (C) 15.47330	Consumption kWh RESSFDE	Normalized Consumption RESSFDE
22	01-Apr-07	21:00:00	Sun	6.80	8.67	775222.5	0.000164789
46	02-Apr-07	21:00:00	Mon	4.90	10.57	773624.84	0.00016445
70	03-Apr-07	21:00:00	Tue	7.30	8.17	750965.36	0.000159633
94	04-Apr-07	21:00:00	Wed	7.30	8.17	664050.48	0.000141158
118	05-Apr-07	21:00:00	Thu	9.50	5.97	564839.04	0.000120068
142	06-Apr-07	21:00:00	Fri	10.60	4.87	540246.13	0.00011484
166	07-Apr-07	21:00:00	Sat	12.90	2.57	486643.12	0.000103446
190	08-Apr-07	21:00:00	Sun	9.10	6.37	592841.74	0.000126021
214	09-Apr-07	21:00:00	Mon	8.50	6.97	649807.23	0.00013813
238	10-Apr-07	21:00:00	Tue	10.20	5.27	624870.07	0.000132829
262	11-Apr-07	21:00:00	Wed	8.60	6.87	626046.2	0.000133079
286	12-Apr-07	21:00:00	Thu	9.40	6.07	659092.4	0.000140104
310	13-Apr-07	21:00:00	Fri	8.40	7.07	724154.53	0.000153934
334	14-Apr-07	21:00:00	Sat	8.30	7.17	519199.53	0.000110367
358	15-Apr-07	21:00:00	Sun	9.90	5.57	638736.16	0.000135777
382	16-Apr-07	21:00:00	Mon	7.80	7.67	741742.54	0.000157673
406	17-Apr-07	21:00:00	Tue	7.50	7.97	672518.16	0.000142958
430	18-Apr-07	21:00:00	Wed	9.20	6.27	639167.48	0.000135868
454	19-Apr-07	21:00:00	Thu	7.90	7.57	567698.18	0.000120676
478	20-Apr-07	21:00:00	Fri	9.50	5.97	519227.64	0.000110373
502	21-Apr-07	21:00:00	Sat	11.10	4.37	486278.6	0.000103369
526	22-Apr-07	21:00:00	Sun	10.40	5.07	488575.83	0.000103857
550	23-Apr-07	21:00:00	Mon	12.90	2.57	530933.38	0.000112861
574	24-Apr-07	21:00:00	Tue	10.80	4.67	532245.13	0.00011314
598	25-Apr-07	21:00:00	Wed	8.10	7.37	613131.19	0.000130334
622	26-Apr-07	21:00:00	Thu	10.10	5.37	516564.73	0.000109806
646	27-Apr-07	21:00:00	Fri	12.40	3.07	466736.42	9.92144E-05
670	28-Apr-07	21:00:00	Sat	9.30	6.17	508827.08	0.000108162
694	29-Apr-07	21:00:00	Sun	11.50	3.97	527371.8	0.000112104
718	30-Apr-07	21:00:00	Mon	12.20	3.27	513515.28	0.000109158
742	01						
766	02						
790	03						
814	04						
838	05						
862	06						
886	07						
910	08						
934	09-May-07	21:00:00	Wed	9.90	5.57	481901.84	0.000102438
958	10-May-07	21:00:00	Thu	13.10	2.37	414137.87	8.80335E-05
982	11-May-07	21:00:00	Fri	12.30	3.17	422996.81	8.99167E-05
1006	12-May-07	21:00:00	Sat	13.40	2.07	434778	9.2421E-05
1030	13-May-07	21:00:00	Sun	12.20	3.27	484743.57	0.000103042
1054	14-May-07	21:00:00	Mon	11.70	3.77	437782.37	9.30597E-05
1078	15-May-07	21:00:00	Tue	16.80	0.00	443380.5	9.42497E-05





Hourly observations of BPT:

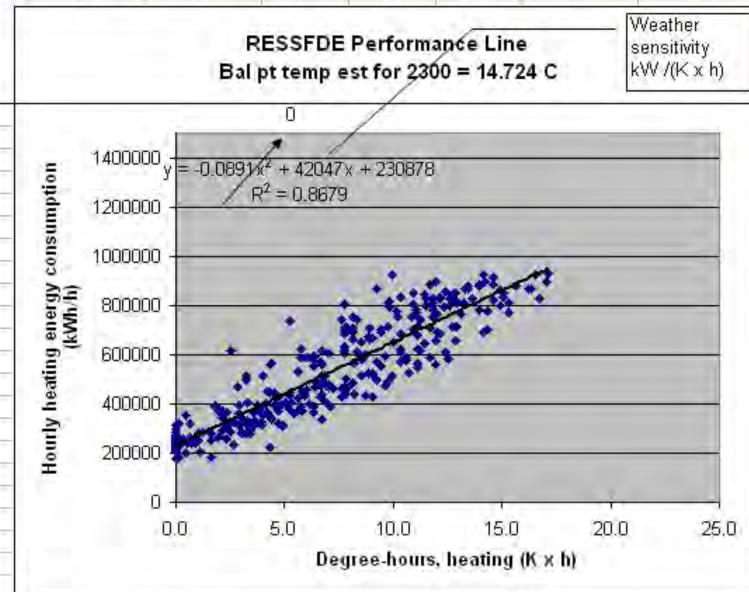
At 2100, BPT = 15.5°C

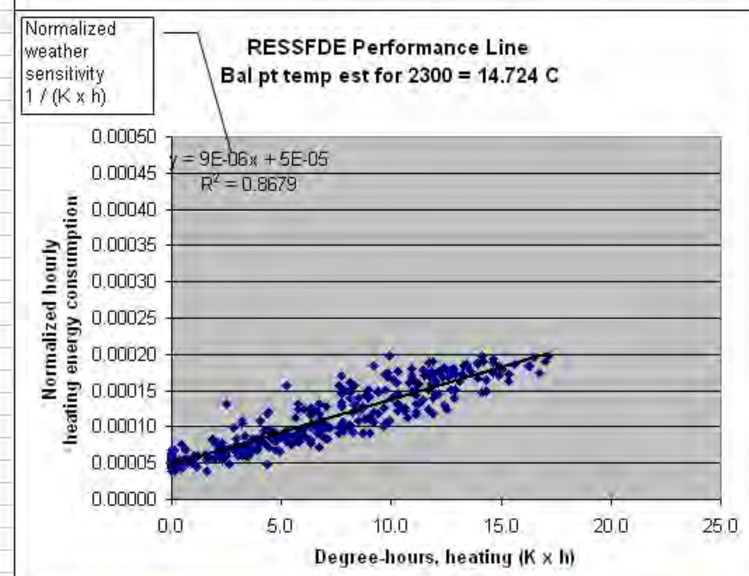
RSSFDE wxsensdata 1900 | RSSFDE wxsensdata 2000 | **RSSFDE wxsensdata 2100** | RSSFDE wxsensdata 2200

Microsoft Excel - RESSFDE bal temp F0708.xls

I24 =H24/'RSSFDE wxsensdata'!$H$8786

1	Excel Date	Month	Day	Time	Weekday	LR EC Dry Bulb C	DHh (K x h) at Base Temp (C) 14.72400	Consumption kWh RESSFDE	Normalized Consumption RESSFDE
24	01-Apr-07	4	1	23:00:00	Sun	2.80	11.92	558953.09	0.00011882
48	02-Apr-07	4	2	23:00:00	Mon	3.60	11.12	566269.08	0.00012037
72	03-Apr-07	4	3	23:00:00	Tue	6.60	8.12	486968.57	0.00010352
96	04-Apr-07	4	4	23:00:00	Wed	7.70	7.02	479487.89	0.00010193
120	05-Apr-07	4	5	23:00:00	Thu	8.80	5.92	431214.18	9.1663E-05
144	06-Apr-07	4	6	23:00:00	Fri	10.50	4.22	363234.36	7.7213E-05
168	07-Apr-07	4	7	23:00:00	Sat	12.70	2.02	364081.8	7.7393E-05
192	08-Apr-07	4	8	23:00:00	Sun	9.10	5.62	420029.56	8.9286E-05
216	09-Apr-07	4	9	23:00:00	Mon	7.90	6.82	482429.43	0.00010255
240	10-Apr-07	4	10	23:00:00	Tue	8.30	6.42	489855.78	0.00010413
264	11-Apr-07	4	11	23:00:00	Wed	8.10	6.62	473311.04	0.00010061
288	12-Apr-07	4	12	23:00:00	Thu	8.30	6.42	465118.34	9.887E-05
312	13-Apr-07	4	13	23:00:00	Fri	8.40	6.32	574192.28	0.00012206
336	14-Apr-07	4	14	23:00:00	Sat	7.70	7.02	466566.27	9.9178E-05
360	15-Apr-07	4	15	23:00:00	Sun	8.70	6.02	456727.88	9.7087E-05
384	16-Apr-07	4	16	23:00:00	Mon	6.80	7.92	468769.7	9.9647E-05
408	17-Apr-07	4	17	23:00:00	Tue	6.50	8.22	440661.15	9.3672E-05
432	18-Apr-07	4	18	23:00:00	Wed	6.00	8.72	432656.1	9.197E-05
456	19-Apr-07	4	19	23:00:00	Thu	7.90	6.82	408909.47	8.6922E-05
480	20-Apr-07	4	20	23:00:00	Fri	7.70	7.02	392761.93	8.349E-05
504	21-Apr-07	4	21	23:00:00	Sat	11.80	2.92	390995.24	8.3114E-05
528	22-Apr-07	4	22	23:00:00	Sun	10.10	4.62	422610.43	8.9835E-05
552	23-Apr-07	4	23	23:00:00	Mon	11.80	2.92	357234.65	7.5938E-05
576	24-Apr-07	4	24	23:00:00	Tue	9.90	4.82	395516.03	8.4075E-05
600	25-Apr-07	4	25	23:00:00	Wed	8.10	6.62	430588.3	9.153E-05
624	26-Apr-07	4	26	23:00:00	Thu	10.20	4.52	395947.42	8.4167E-05
648	27-Apr-07	4	27	23:00:00	Fri	11.00	3.72	393029.87	8.3547E-05
672	28-Apr-07	4	28	23:00:00	Sat	8.40	6.32	367150.23	7.8045E-05
696	29-Apr-07	4	29	23:00:00	Sun	8.90	5.82	371292.38	7.8926E-05
720	30-Apr-07	4	30	23:00:00	Mon	10.90	3.82	373082.08	7.9306E-05
744	01-May-07	5	1	23:00:00	Tue	10.20	4.52	444550.17	9.4498E-05
768	02-May-07	5	2	23:00:00	Wed	8.00	6.72	437729.26	9.3048E-05
792	03-May-07	5	3	23:00:00	Thu	7.60	7.12	389780.89	8.2856E-05
816	[illegible]	5	4	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]5115E-05
840	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]37E-05
864	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible].47E-05
888	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]472E-05
912	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]289E-05
936	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]139E-05
960	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]268E-05
984	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]684E-05
1008	12-May-07	5	12	23:00:00	Sat	[illegible]	[illegible]	[illegible]	[illegible]574E-05
1032	13-May-07	5	13	23:00:00	Sun	10.30	4.42	334420.84	7.1088E-05
1056	14-May-07	5	14	23:00:00	Mon	11.30	3.42	277320.25	5.895E-05
1080	15-May-07	5	15	23:00:00	Tue	13.70	1.02	278548.91	5.9211E-05
1104	16-May-07	5	16	23:00:00	Wed	11.10	3.62	312148.46	6.6354E-05
1128	17-May-07	5	17	23:00:00	Thu	11.60	3.12	338211.81	7.1894E-05
1152	18-May-07	5	18	23:00:00	Fri	12.00	2.72	325349.49	6.916E-05





RSSFDE wxsensdata 2100 | RSSFDE wxsensdata 2200 | **RSSFDE wxsensdata 2300** | RSSFDE wxsensdata 0(

Filter Mode

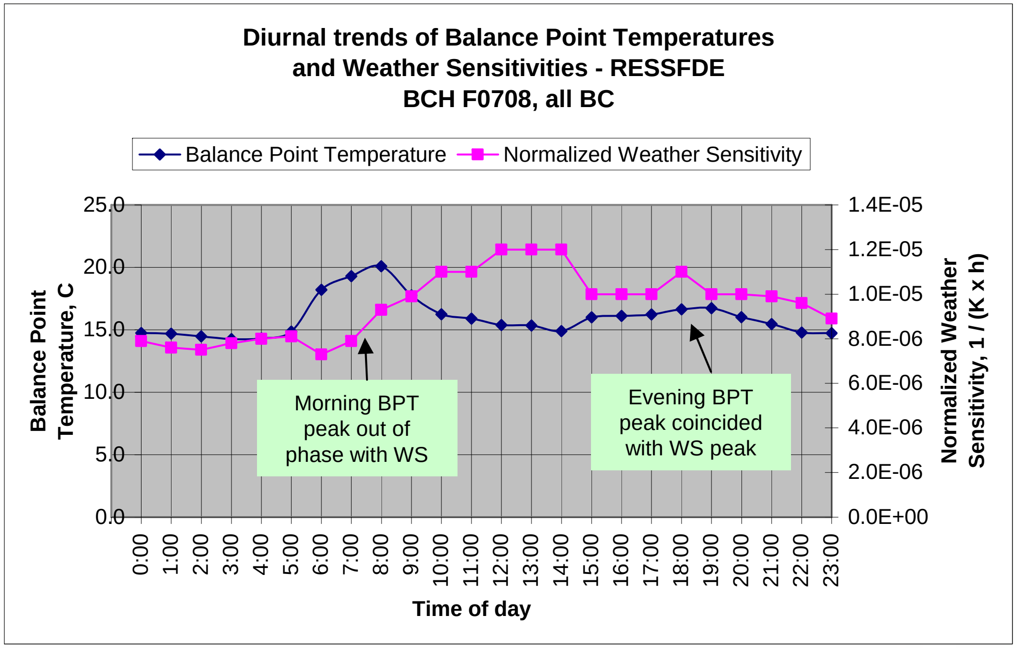
Hourly observations of BPT:

At 2300, BPT = 14.7°C

Diurnal Trends of Balance Point Temperatures and Weather Sensitivities

RESSFDE

Time	BPT, °C	WS, 1 / (K x h)
0:00	14.8	7.9E-06
1:00	14.7	7.6E-06
2:00	14.5	7.5E-06
3:00	14.3	7.8E-06
4:00	14.3	8.0E-06
5:00	14.9	8.1E-06
6:00	18.2	7.3E-06
7:00	19.3	7.9E-06
8:00	20.1	9.3E-06
9:00	17.8	9.9E-06
10:00	16.2	1.1E-05
11:00	15.9	1.1E-05
12:00	15.4	1.2E-05
13:00	15.3	1.2E-05
14:00	14.9	1.2E-05
15:00	16.0	1.0E-05
16:00	16.1	1.0E-05
17:00	16.2	1.0E-05
18:00	16.6	1.1E-05
19:00	16.7	1.0E-05
20:00	16.0	1.0E-05
21:00	15.5	9.9E-06
22:00	14.8	9.6E-06
23:00	14.7	8.9E-06
Average =	**16.0**	**9.5E-06**



Weather sensitivity (WS) is observed to be approximately 180° out of phase with BPT except from mid-afternoon until 2200

BC hydro FOR GENERATIONS

RESSFDNE Hourly Data Analyses for F0708

Residential – Single/Duplex (Non-Elec. Heat)

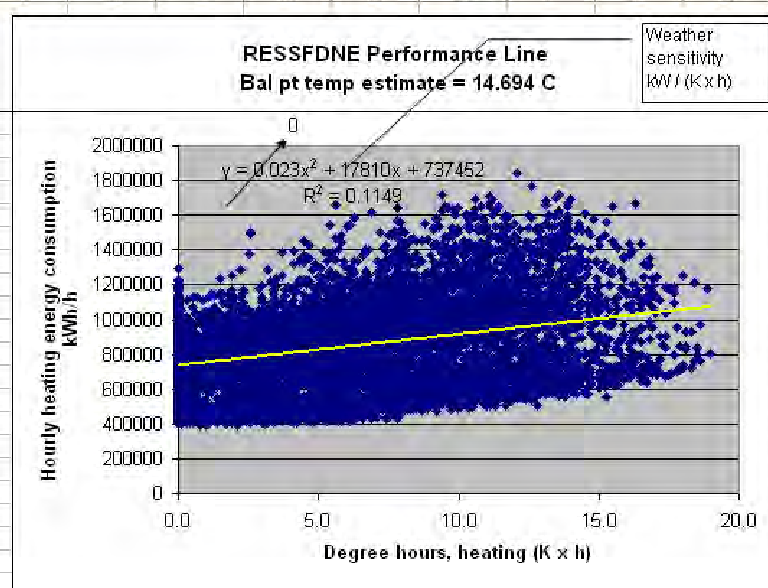
Microsoft Excel - RESSFDNE bal temp F0708.xls

H1 Consumption kWh RESSFDNE

	Excel Date	Day	Time	Weekday	LR EC Dry Bulb C	DHh (K x h) at Base Temp (C) 14.69400	Consumption kWh RESSFDNE	Normalized Consumption RESSFDNE
2	01-Apr-07	1	1:00:00	Sun	5.90	8.79	582626.25	7.9335E-05
3	01-Apr-07	1	2:00:00	Sun	5.70	8.99	582406.43	7.9305E-05
4	01-Apr-07	1	3:00:00	Sun	4.90	9.79	594803.42	8.0993E-05
5	01-Apr-07	1	4:00:00	Sun	5.40	9.29	549014.19	7.4758E-05
6	01-Apr-07	1	5:00:00	Sun	5.00	9.69	573642.04	7.8112E-05
7	01-Apr-07	1	6:00:00	Sun	5.00	9.69	602472.37	8.2038E-05
8	01-Apr-07	1	7:00:00	Sun	5.10	9.59	636398.8	8.6657E-05
9	01-Apr-07	1	8:00:00	Sun	5.10	9.59	821531.35	0.00011187
10	01-Apr-07	1	9:00:00	Sun	5.40	9.29	992667.19	0.00013517
11	01-Apr-07	1	10:00:00	Sun	5.70	8.99	976663.59	0.00013299
12	01-Apr-07	1	11:00:00	Sun	6.40	8.29	959707.42	0.00013068
13	01-Apr-07	1	12:00:00	Sun	6.80	7.89	928263.92	0.0001264
14	01-Apr-07	1	13:00:00	Sun	8.00	6.69	881860.61	0.00012008
15	01-Apr-07	1	14:00:00	Sun	8.10	6.59	998516.33	0.00013597
16	01-Apr-07	1	15:00:00	Sun	8.90	5.79	928082.18	0.00012638
17	01-Apr-07	1	16:00:00	Sun	10.20	4.49	908203.41	0.00012367
18	01-Apr-07	1	17:00:00	Sun	8.80	5.89	1115007.02	0.00015183
19	01-Apr-07	1	18:00:00	Sun	8.20	6.49	1127333	0.00015351
30	02-Apr-07	2	5:00:00	Mon	3.10	11.59	621373.94	8.4612E-05
43	02-Apr-07	2	18:00:00	Mon	7.20	7.49	1002433.28	0.0001365
44	02-Apr-07	2	19:00:00	Mon	6.60	8.09	1029281.07	0.00014016
45	02-Apr-07	2	20:00:00	Mon	6.10	8.59	1047977.79	0.0001427
46	02-Apr-07	2	21:00:00	Mon	4.90	9.79	1067691.8	0.00014539
47	02-Apr-07	2	22:00:00	Mon	4.20	10.49	928347.7	0.00012641
48	02-Apr-07	2	23:00:00	Mon	3.60	11.09	739719.18	0.00010073
49	03-Apr-07	3	0:00:00	Tue	3.70	10.99	575024.94	7.83E-05

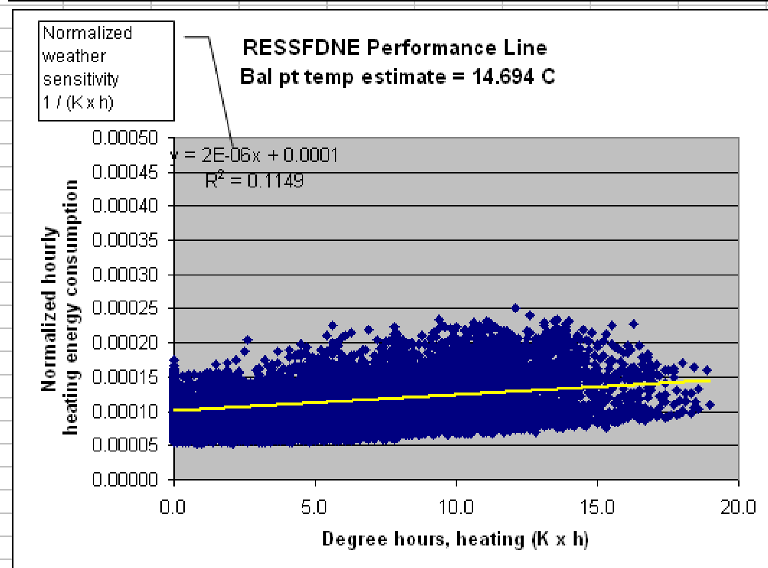
	c6	c5	c4	c3	c2	c1	b
Poly 6	0.003169	-0.94765	38.20408	-311.901	-2976.47	13172.41	970820

The evidence of two sample populations in this and other charts for various site types was explained by charting separate energy signatures for 03:00 and 20:00 corresponding to BC Hydro's System daily consumption minimum and maximum respectively. Analyses by hour were unaffected by the dual population phenomenon.



For entire set of RESSFDNE data points,

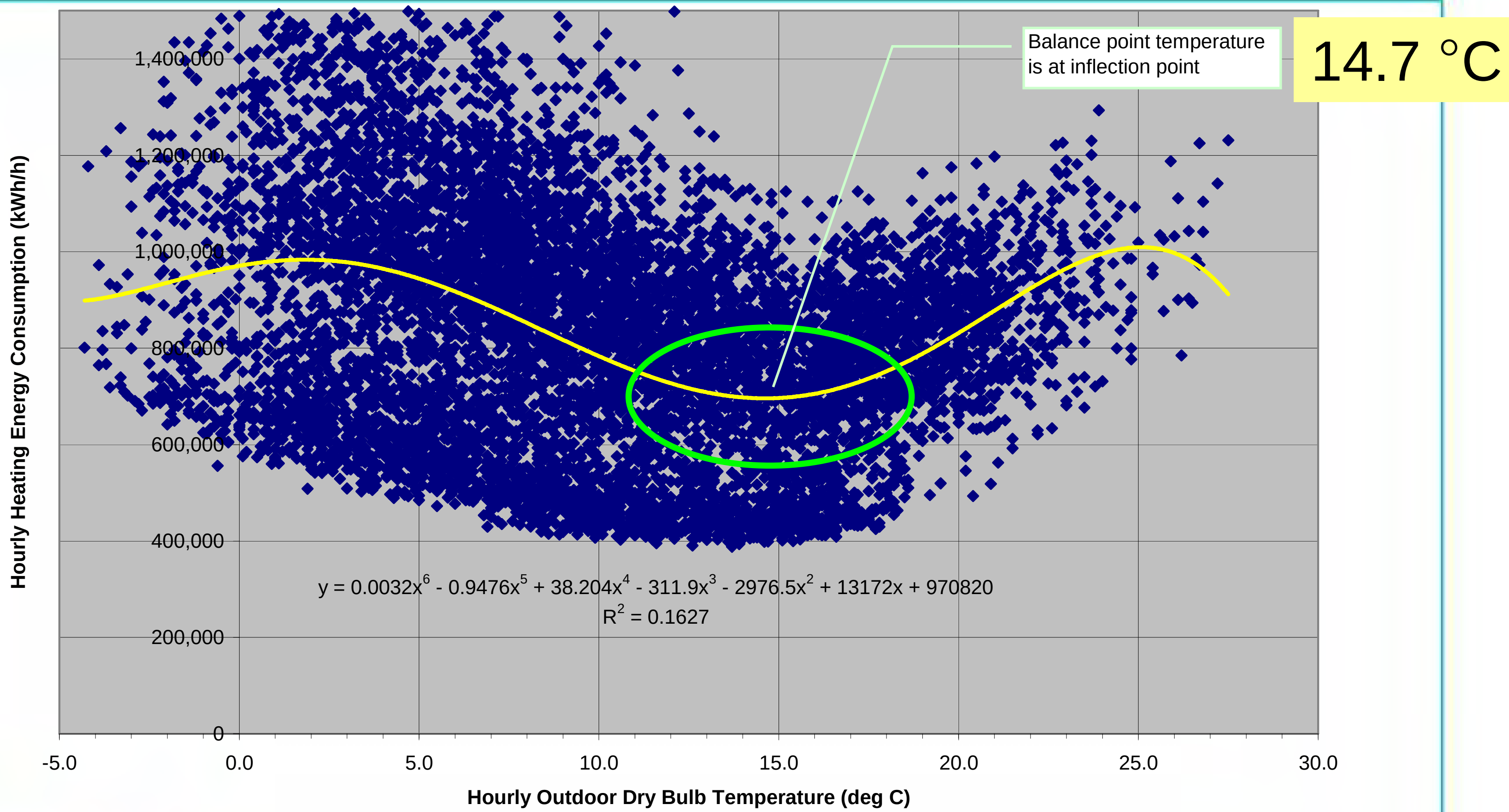
BPT = 14.7°C



wxsensdata / Plot first derivative / Chart-Energy Signature / wxsensdata 0100 / wxsensdata 0200 / wxsensdata

Ready NUM

RESSFDNE Energy Signature



The evidence of two sample populations in this and other charts for various site types was explained by charting separate energy signatures for 03:00 and 20:00 corresponding to BC Hydro's System daily consumption minimum and maximum respectively. Analyses by hour were unaffected by the dual population phenomenon.

BC hydro FOR GENERATIONS

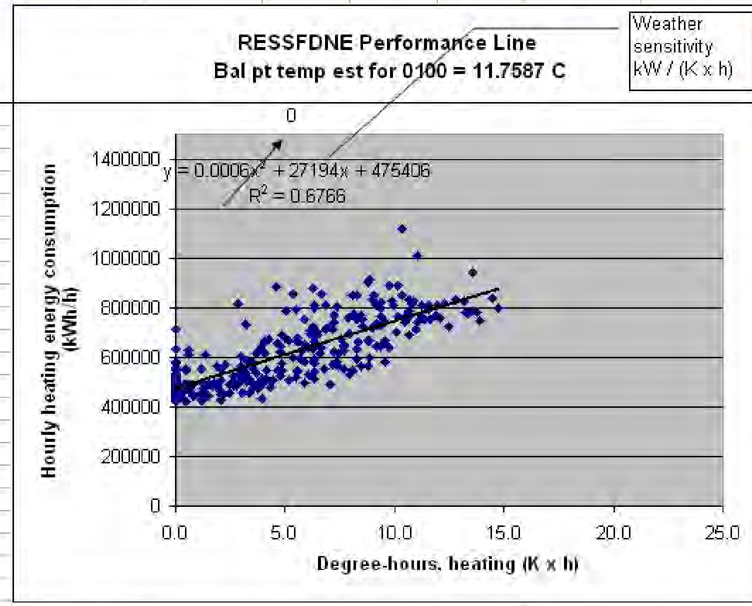
Microsoft Excel - RESSFDNE bal temp F0708.xls

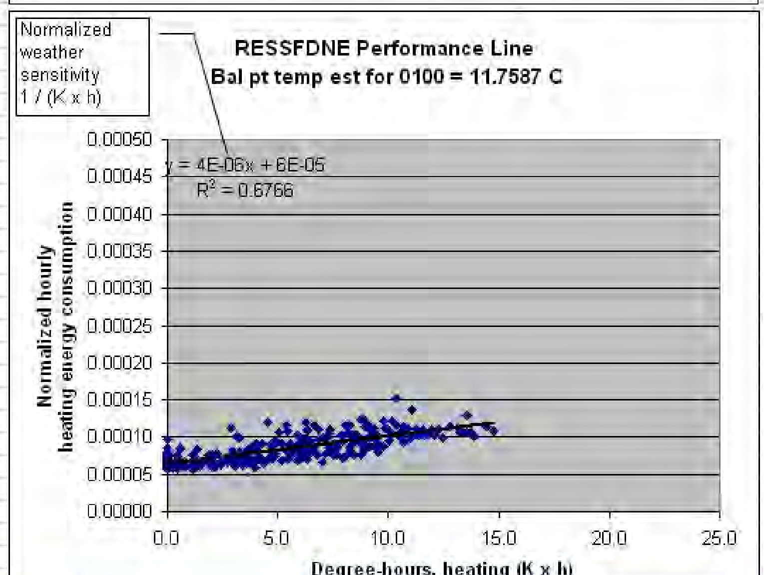
I2 =H2/wxsensdata!$H$8786

1	Excel Date	Month	Day	Time	Weekday	LR EC Dry Bulb C	DHh (K x h) at Base Temp (C) 11.75870	Consumption kWh RESSFDNE	Normalized Consumption RESSFDNE
2	01-Apr-07	4	1	1:00:00	Sun	5.90	5.86	582626.25	7.9335E-05
26	02-Apr-07	4	2	1:00:00	Mon	3.00	8.76	563113.77	7.6678E-05
50	03-Apr-07	4	3	1:00:00	Tue	3.70	8.06	542401.46	7.3858E-05
74	04-Apr-07	4	4	1:00:00	Wed	6.30	5.46	521259.74	7.0979E-05
98	05-Apr-07	4	5	1:00:00	Thu	7.40	4.36	503593.32	6.8574E-05
122	06-Apr-07	4	6	1:00:00	Fri	8.80	2.96	535214.96	7.2879E-05
146	07-Apr-07	4	7	1:00:00	Sat	10.00	1.76	496253.94	6.7574E-05
170	08-Apr-07	4	8	1:00:00	Sun	11.30	0.46	547173.98	7.4508E-05
194	09-Apr-07	4	9	1:00:00	Mon	8.70	3.06	516881.81	7.0383E-05
218	10-Apr-07	4	10	1:00:00	Tue	7.60	4.16	513175.86	6.9878E-05
242	11-Apr-07	4	11	1:00:00	Wed	6.20	5.56	539463.12	7.3458E-05
266	12-Apr-07	4	12	1:00:00	Thu	7.90	3.86	502554.54	6.8432E-05
290	13-Apr-07	4	13	1:00:00	Fri	8.50	3.26	504383.83	6.8681E-05
314	14-Apr-07	4	14	1:00:00	Sat	9.70	2.06	553760.55	7.5405E-05
338	15-Apr-07	4	15	1:00:00	Sun	7.00	4.76	522018.47	7.1082E-05
362	16-Apr-07	4	16	1:00:00	Mon	8.50	3.26	507205.9	6.9065E-05
386	17-Apr-07	4	17	1:00:00	Tue	3.80	7.96	527649.33	7.1849E-05
410	18-Apr-07	4	18	1:00:00	Wed	6.20	5.56	544969.45	7.4208E-05
434	19-Apr-07	4	19	1:00:00	Thu	5.70	6.06	528693.73	7.1991E-05
458	20-Apr-07	4	20	1:00:00	Fri	5.90	5.86	496961.68	6.7671E-05
482	21-Apr-07	4	21	1:00:00	Sat	5.40	6.36	515339.89	7.0173E-05
506	22-Apr-07	4	22	1:00:00	Sun	10.40	1.36	485681.44	6.6134E-05
530	23-Apr-07	4	23	1:00:00	Mon	7.40	4.36	480210.54	6.539E-05
554	24-Apr-07	4	24	1:00:00	Tue	11.80	0.00	449134.08	6.1158E-05
578	25-Apr-07	4	25	1:00:00	Wed	8.70	3.06	453568.51	6.1762E-05
602	26-Apr-07	4	26	1:00:00	Thu	8.20	3.56	492206.34	6.7023E-05
626	27-Apr-07	4	27	1:00:00	Fri	9.90	1.86	564537.28	7.6872E-05
650	28-Apr-07	4	28	1:00:00	Sat	8.80	2.96	566996.82	7.7207E-05
1082	16-May-07	5	16	1:00:00	Wed	11.90	0.00	456527.82	6.2165E-05
1106	17-May-07	5	17	1:00:00	Thu	9.60	2.16	448289.26	6.1043E-05
1130	18-May-07	5	18	1:00:00	Fri	9.70	2.06	464531.48	6.3255E-05

For non-electrically heated single family houses/duplexes, selected slides show selected observations of hourly BPT:

At 0100, BPT = 11.8°C





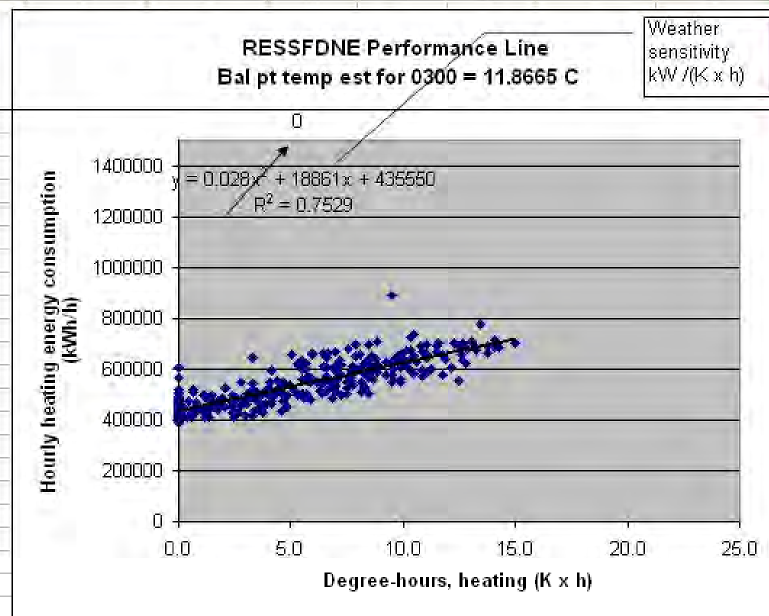
wxsensdata | Chart-Energy Signature | wxsensdata 0100 | wxsensdata 0200 | wxsensdata 0300

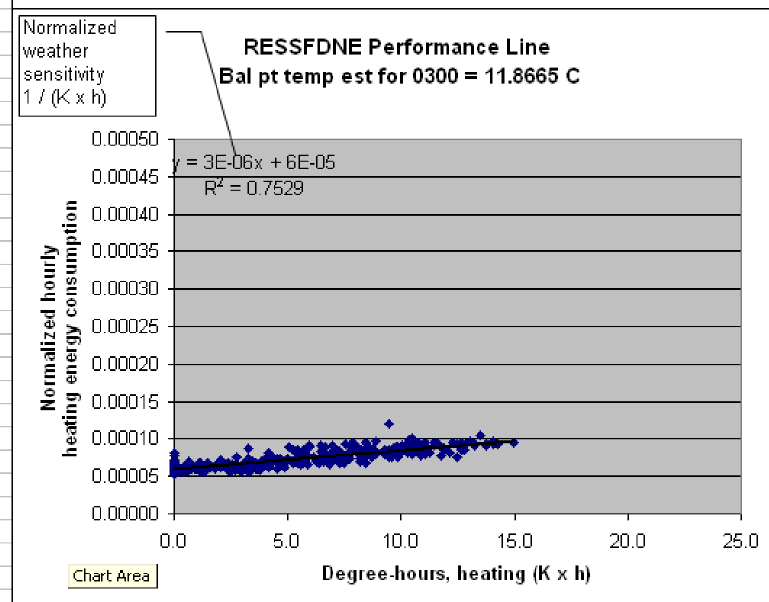
Microsoft Excel - RESSFDNE bal temp F0708.xls

Row	Excel Date	Month	Day	Time	Weekday	LR EC Dry Bulb C	DHh (K x h) at Base Temp (C) 11.86650	Consumption kWh RESSFDNE	Normalized Consumption RESSFDNE
4	01-Apr-07	4	1	3:00:00	Sun	4.90	6.97	594803.42	8.0993E-05
28	02-Apr-07	4	2	3:00:00	Mon	3.60	8.27	580494.94	7.9045E-05
52	03-Apr-07	4	3	3:00:00	Tue	2.00	9.87	548129.83	7.4638E-05
76	04-Apr-07	4	4	3:00:00	Wed	5.30	6.57	511398.98	6.9636E-05
100	05-Apr-07	4	5	3:00:00	Thu	7.60	4.27	493707.78	6.7227E-05
124	06-Apr-07	4	6	3:00:00	Fri	7.70	4.17	471821.22	6.4247E-05
148	07-Apr-07	4	7	3:00:00	Sat	10.10	1.77	471415.23	6.4192E-05
172	08-Apr-07	4	8	3:00:00	Sun	11.40	0.47	470974.51	6.4132E-05
196	09-Apr-07	4	9	3:00:00	Mon	9.10	2.77	548880.31	7.474E-05
220	10-Apr-07	4	10	3:00:00	Tue	6.70	5.17	514758.48	7.0094E-05
244	11-Apr-07	4	11	3:00:00	Wed	5.00	6.87	536947.53	7.3115E-05
268	12-Apr-07	4	12	3:00:00	Thu	7.30	4.57	504747.61	6.8731E-05
292	13-Apr-07	4	13	3:00:00	Fri	8.00	3.87	510613.57	6.9529E-05
316	14-Apr-07	4	14	3:00:00	Sat	9.50	2.37	465466.94	6.3382E-05
340	15-Apr-07	4	15	3:00:00	Sun	6.20	5.67	491740.26	6.696E-05
364	16-Apr-07	4	16	3:00:00	Mon	7.90	3.97	508677.14	6.9266E-05
388	17-Apr-07	4	17	3:00:00	Tue	4.90	6.97	536029.66	7.299E-05
412	18-Apr-07	4	18	3:00:00	Wed	4.40	7.47	504504.16	6.8698E-05
436	19-Apr-07	4	19	3:00:00	Thu	4.10	7.77	535291.1	7.289E-05
460	20-Apr-07	4	20	3:00:00	Fri	5.00	6.87	484850.43	6.6021E-05
484	21-Apr-07	4	21	3:00:00	Sat	4.40	7.47	544994.65	7.4211E-05
508	22-Apr-07	4	22	3:00:00	Sun	9.50	2.37	449947.33	6.1269E-05
532	23-Apr-07	4	23	3:00:00	Mon	8.30	3.57	475117.85	6.4696E-05
556	24-Apr-07	4	24	3:00:00	Tue	10.50	1.37	475506.94	6.4749E-05
580	25-Apr-07	4	25	3:00:00	Wed	6.30	5.57	492272.73	6.7032E-05
604	26-Apr-07	4	26	3:00:00	Thu	8.10	3.77	499868.55	6.8066E-05
628	27-Apr-07	4	27	3:00:00	Fri	9.80	2.07	524903.36	7.1475E-05
652	28-Apr-07	4	28	3:00:00	Sat	7.80	4.07	493259.42	6.7166E-05
676	29-Apr-07	4	29	3:00:00	Sun	7.80	4.07	492408.02	6.705E-05
700	30-Apr-07	4	30	3:00:00	Mon	7.00	4.87	498928.38	6.7938E-05
724	01-May-07	5	1	3:00:00	Tue	8.80	3.07	459602.43	6.2583E-05
748	02-M								4E-05
772	03-M								1E-05
796	04-M								9E-05
820	05-M								9E-05
844	06-M								9E-05
868	07-M								5E-05
892	08-M								6E-05
916	09-M								2E-05
940	10-May-07	5	10	3:00:00	Thu	7.00	4.87	449925.02	6.1266E-05
964	11-May-07	5	11	3:00:00	Fri	7.30	4.57	434979.97	5.9231E-05
988	12-May-07	5	12	3:00:00	Sat	10.60	1.27	432785.81	5.8932E-05
1012	13-May-07	5	13	3:00:00	Sun	9.40	2.47	435768.17	5.9338E-05
1036	14-May-07	5	14	3:00:00	Mon	9.20	2.67	426990.27	5.8143E-05
1060	15-May-07	5	15	3:00:00	Tue	9.40	2.47	413490.17	5.6304E-05
1084	16-May-07	5	16	3:00:00	Wed	11.70	0.17	417328.98	5.6827E-05
1108	17-May-07	5	17	3:00:00	Thu	10.10	1.77	438313.62	5.9684E-05
1132	18-May-07	5	18	3:00:00	Fri	8.30	3.57	439654.37	5.9867E-05

Hourly observations of BPT:

At 0300, BPT = 11.9°C





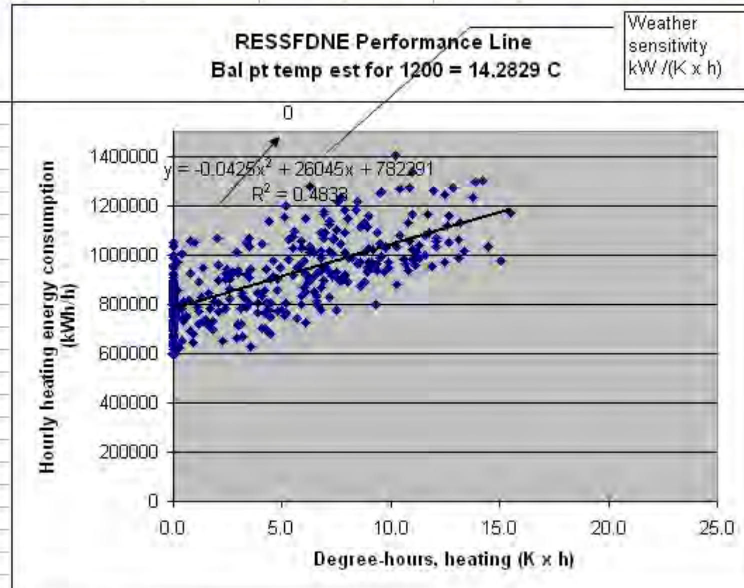
Plot first derivative / Chart-Energy Signature / wxsensdata 0100 / wxsensdata 0200 / **wxsensdata 0300** / wxse

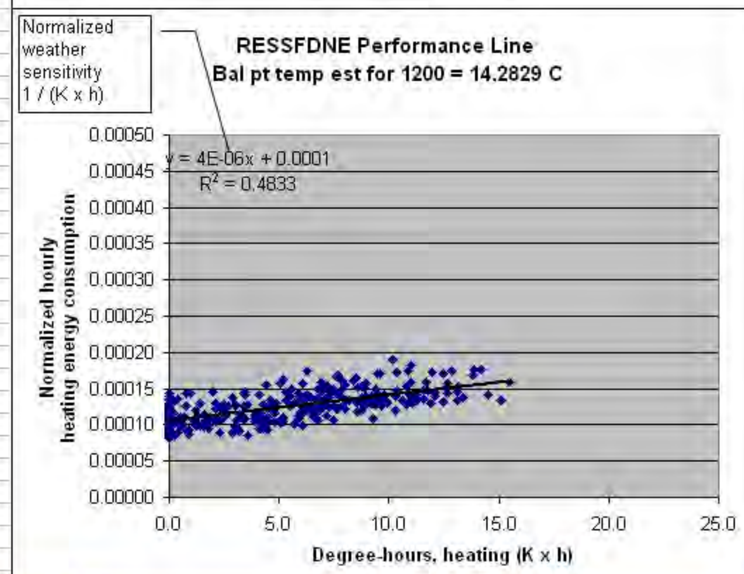
Filter Mode

Microsoft Excel - RESSFDNE bal temp F0708.xls

I13 =H13/wxsensdata!$H$8786

1	Excel Date	Month	Day	Time	Weekday	LR EC Dry Bulb C	DHh (K x h) at Base Temp (C) 14.28290	Consumption kWh RESSFDNE	Normalized Consumption RESSFDNE
13	01-Apr-07	4	1	12:00:00	Sun	6.80	7.48	928263.92	0.0001264
37	02-Apr-07	4	2	12:00:00	Mon	5.00	9.28	797086.32	0.00010854
61	03-Apr-07	4	3	12:00:00	Tue	7.50	6.78	777577.47	0.00010588
85	04-Apr-07	4	4	12:00:00	Wed	7.80	6.48	849982.1	0.00011574
109	05-Apr-07	4	5	12:00:00	Thu	11.40	2.88	659755.16	8.9838E-05
133	06-Apr-07	4	6	12:00:00	Fri	13.50	0.78	922319.99	0.00012559
157	07-Apr-07	4	7	12:00:00	Sat	12.70	1.58	844360.83	0.00011498
181	08-Apr-07	4	8	12:00:00	Sun	10.20	4.08	1045326.11	0.00014234
205	09-Apr-07	4	9	12:00:00	Mon	11.40	2.88	1009973.21	0.00013753
229	10-Apr-07	4	10	12:00:00	Tue	9.80	4.48	678310.94	9.2365E-05
253	11-Apr-07	4	11	12:00:00	Wed	8.20	6.08	724957.88	9.8716E-05
277	12-Apr-07	4	12	12:00:00	Thu	10.10	4.18	699941.69	9.531E-05
301	13-Apr-07	4	13	12:00:00	Fri	6.80	7.48	778374.98	0.00010599
325	14-Apr-07	4	14	12:00:00	Sat	10.90	3.38	816062.81	0.00011112
349	15-Apr-07	4	15	12:00:00	Sun	10.00	4.28	801447.51	0.00010913
373	16-Apr-07	4	16	12:00:00	Mon	6.70	7.58	900202.37	0.00012258
397	17-Apr-07	4	17	12:00:00	Tue	9.90	4.38	777540.17	0.00010588
421	18-Apr-07	4	18	12:00:00	Wed	9.10	5.18	805582.42	0.00010969
445	19-Apr-07	4	19	12:00:00	Thu	10.10	4.18	766228.76	0.00010434
469	20-Apr-07	4	20	12:00:00	Fri	9.90	4.38	776017.66	0.00010567
493	21-Apr-07	4	21	12:00:00	Sat	12.20	2.08	959895.73	0.00013071
517	22-Apr-07	4	22	12:00:00	Sun	13.00	1.28	827283.33	0.00011265
541	23-Apr-07	4	23	12:00:00	Mon	14.20	0.08	740985.39	0.0001009
565	24-Apr-07	4	24	12:00:00	Tue	10.20	4.08	698708.51	9.5142E-05
589	25-Apr-07	4	25	12:00:00	Wed	10.40	3.88	763329.44	0.00010394
613	26-Apr-07	4	26	12:00:00	Thu	10.00	4.28	695686.45	9.4731E-05
637	27-Apr-07	4	27	12:00:00	Fri	11.70	2.58	823627.49	0.00011215
661	28-Apr-07	4	28	12:00:00	Sat	11.10	3.18	845057.56	0.00011507
685	29-Apr-07	4	29	12:00:00	Sun	11.00	3.28	822993.09	0.00011207
709	30-Apr-07	4	30	12:00:00	Mon	12.50	1.78	695235.09	9.4669E-05
733	01-May-07	5	1	12:00:00	Tue	9.30	4.98	774867.5	0.00010551
757	02-May-07	5	2	12:00:00	Wed	11.30	2.98	721044.7	9.8184E-05
781	03-May-07	5	3	12:00:00	Thu	10.00	4.28	695931.6	9.4764E-05
805	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]669E-05
829									[illegible]0012832
853									[illegible]0012433
877									[illegible]0001152
901									[illegible]0010678
925									[illegible]186E-05
949									[illegible]272E-05
973									[illegible]442E-05
997	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]527E-05
1021	13-May-07	5	13	12:00:00	Sun	11.70	2.58	900867.47	0.00012267
1045	14-May-07	5	14	12:00:00	Mon	14.00	0.28	623336.53	8.4879E-05
1069	15-May-07	5	15	12:00:00	Tue	17.70	0.00	593430.16	8.0806E-05
1093	16-May-07	5	16	12:00:00	Wed	16.00	0.00	667899.69	9.0947E-05
1117	17-May-07	5	17	12:00:00	Thu	13.80	0.48	812098.62	0.00011058
1141	18-May-07	5	18	12:00:00	Fri	15.70	0.00	729290.17	9.9306E-05

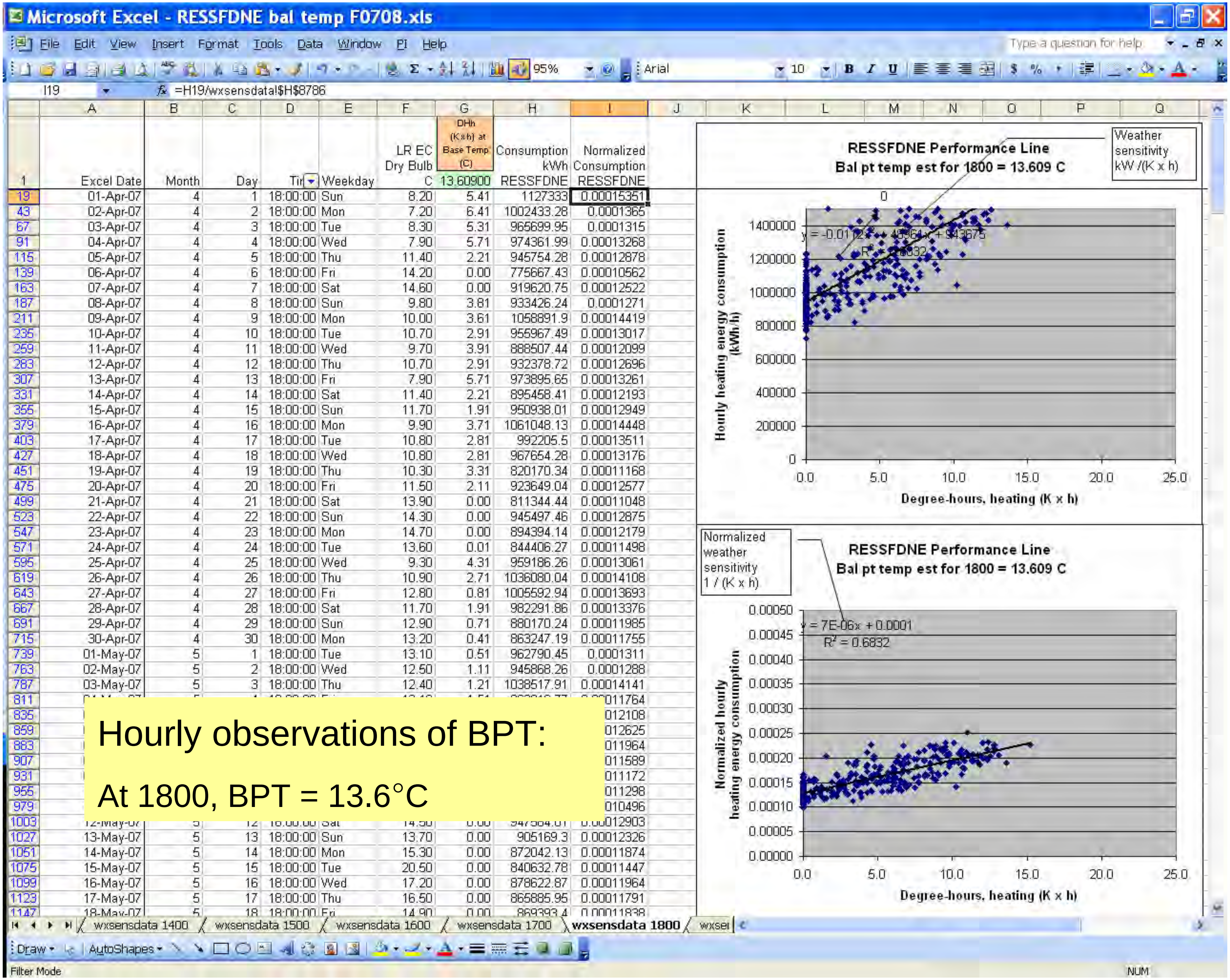




wxsensdata 0800 | wxsensdata 0900 | wxsensdata 1000 | wxsensdata 1100 | wxsensdata 1200

Hourly observations of BPT:

At 1200, BPT = 14.3°C



1	Excel Date	Month	Day	Time	Weekday	LR EC Dry Bulb C	DHh (K×h) at Base Temp (C) 13.60900	Consumption kWh RESSFDNE	Normalized Consumption RESSFDNE
19	01-Apr-07	4	1	18:00:00	Sun	8.20	5.41	1127333	0.00015351
43	02-Apr-07	4	2	18:00:00	Mon	7.20	6.41	1002433.28	0.0001365
67	03-Apr-07	4	3	18:00:00	Tue	8.30	5.31	965699.95	0.0001315
91	04-Apr-07	4	4	18:00:00	Wed	7.90	5.71	974361.99	0.00013268
115	05-Apr-07	4	5	18:00:00	Thu	11.40	2.21	945754.28	0.00012878
139	06-Apr-07	4	6	18:00:00	Fri	14.20	0.00	775667.43	0.00010562
163	07-Apr-07	4	7	18:00:00	Sat	14.60	0.00	919620.75	0.00012522
187	08-Apr-07	4	8	18:00:00	Sun	9.80	3.81	933426.24	0.0001271
211	09-Apr-07	4	9	18:00:00	Mon	10.00	3.61	1058891.9	0.00014419
235	10-Apr-07	4	10	18:00:00	Tue	10.70	2.91	955967.49	0.00013017
259	11-Apr-07	4	11	18:00:00	Wed	9.70	3.91	888507.44	0.00012099
283	12-Apr-07	4	12	18:00:00	Thu	10.70	2.91	932378.72	0.00012696
307	13-Apr-07	4	13	18:00:00	Fri	7.90	5.71	973895.65	0.00013261
331	14-Apr-07	4	14	18:00:00	Sat	11.40	2.21	895458.41	0.00012193
355	15-Apr-07	4	15	18:00:00	Sun	11.70	1.91	950938.01	0.00012949
379	16-Apr-07	4	16	18:00:00	Mon	9.90	3.71	1061048.13	0.00014448
403	17-Apr-07	4	17	18:00:00	Tue	10.80	2.81	992205.5	0.00013511
427	18-Apr-07	4	18	18:00:00	Wed	10.80	2.81	967654.28	0.00013176
451	19-Apr-07	4	19	18:00:00	Thu	10.30	3.31	820170.34	0.00011168
475	20-Apr-07	4	20	18:00:00	Fri	11.50	2.11	923649.04	0.00012577
499	21-Apr-07	4	21	18:00:00	Sat	13.90	0.00	811344.44	0.00011048
523	22-Apr-07	4	22	18:00:00	Sun	14.30	0.00	945497.46	0.00012875
547	23-Apr-07	4	23	18:00:00	Mon	14.70	0.00	894394.14	0.00012179
571	24-Apr-07	4	24	18:00:00	Tue	13.60	0.01	844406.27	0.00011498
595	25-Apr-07	4	25	18:00:00	Wed	9.30	4.31	959186.26	0.00013061
619	26-Apr-07	4	26	18:00:00	Thu	10.90	2.71	1036080.04	0.00014108
643	27-Apr-07	4	27	18:00:00	Fri	12.80	0.81	1005592.94	0.00013693
667	28-Apr-07	4	28	18:00:00	Sat	11.70	1.91	982291.86	0.00013376
691	29-Apr-07	4	29	18:00:00	Sun	12.90	0.71	880170.24	0.00011985
715	30-Apr-07	4	30	18:00:00	Mon	13.20	0.41	863247.19	0.00011755
739	01-May-07	5	1	18:00:00	Tue	13.10	0.51	962790.45	0.0001311
763	02-May-07	5	2	18:00:00	Wed	12.50	1.11	945868.26	0.0001288
787	03-May-07	5	3	18:00:00	Thu	12.40	1.21	1038517.91	0.00014141
811									011764
835									012108
859									012625
883									011964
907									011589
931									011172
955									011298
979									010496
1003									012903
1027	13-May-07	5	13	18:00:00	Sun	13.70	0.00	905169.3	0.00012326
1051	14-May-07	5	14	18:00:00	Mon	15.30	0.00	872042.13	0.00011874
1075	15-May-07	5	15	18:00:00	Tue	20.50	0.00	840632.78	0.00011447
1099	16-May-07	5	16	18:00:00	Wed	17.20	0.00	878622.87	0.00011964
1123	17-May-07	5	17	18:00:00	Thu	16.50	0.00	865885.95	0.00011791
1147	18-May-07	5	18	18:00:00	Fri	14.90	0.00	869393.4	0.00011838

Hourly observations of BPT:

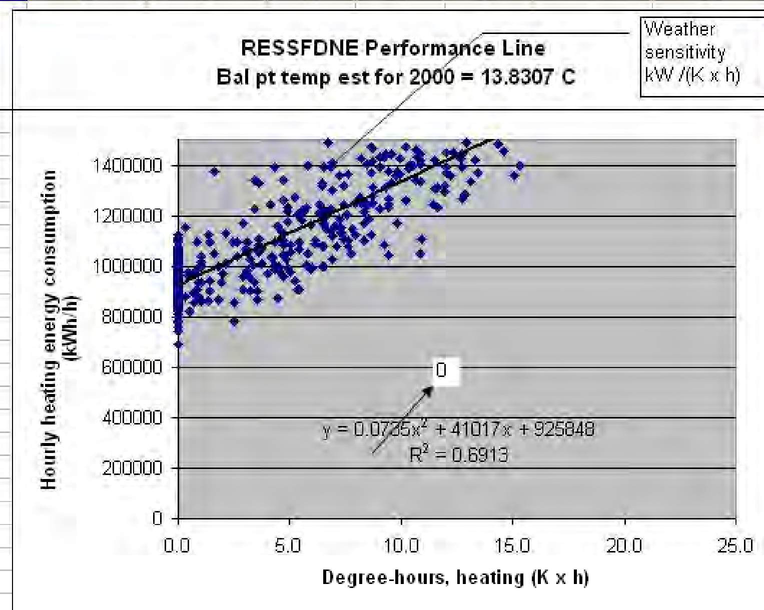
At 1800, BPT = 13.6°C

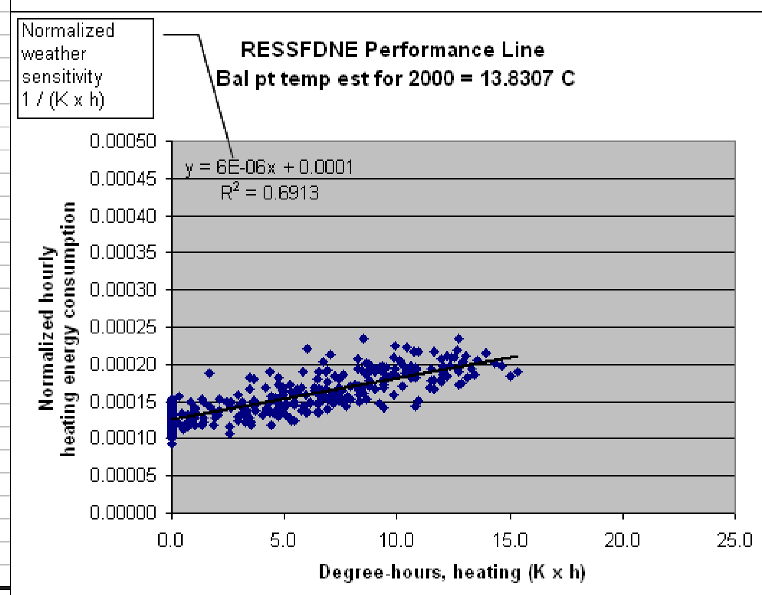
Microsoft Excel - RESSFDNE bal temp F0708.xls

1	Excel Da	Mon	D	Tir	Weekd	LR EC Dry Bulb	DHh (K x h) at Base Temp (C) 13.830	Consumption kWh RESSFDN	Normalized Consumption RESSFDN
21	01-Apr-07	4	1	20:00:00	Sun	7.20	6.63	1198431.77	0.00016319
45	02-Apr-07	4	2	20:00:00	Mon	6.10	7.73	1047977.79	0.0001427
69	03-Apr-07	4	3	20:00:00	Tue	7.40	6.43	996209.73	0.00013565
93	04-Apr-07	4	4	20:00:00	Wed	7.30	6.53	998616.61	0.00013598
117	05-Apr-07	4	5	20:00:00	Thu	9.60	4.23	1035885.43	0.00014105
141	06-Apr-07	4	6	20:00:00	Fri	10.60	3.23	902886.32	0.00012294
165	07-Apr-07	4	7	20:00:00	Sat	12.90	0.93	934220.42	0.00012721
189	08-Apr-07	4	8	20:00:00	Sun	9.50	4.33	989326.79	0.00013472
213	09-Apr-07	4	9	20:00:00	Mon	8.80	5.03	1084292.9	0.00014765
237	10-Apr-07	4	10	20:00:00	Tue	10.20	3.63	1054903.32	0.00014364
261	11-Apr-07	4	11	20:00:00	Wed	9.10	4.73	957501.66	0.00013038
285	12-Apr-07	4	12	20:00:00	Thu	9.80	4.03	967755.83	0.00013178
309	13-Apr-07	4	13	20:00:00	Fri	7.90	5.93	989247.86	0.0001347
333	14-Apr-07	4	14	20:00:00	Sat	8.90	4.93	992307.03	0.00013512
357	15-Apr-07	4	15	20:00:00	Sun	10.10	3.73	1072141.62	0.00014599
381	16-Apr-07	4	16	20:00:00	Mon	8.80	5.03	972887.46	0.00013248
405	17-Apr-07	4	17	20:00:00	Tue	7.30	6.53	1075512.45	0.00014645
429	18-Apr-07	4	18	20:00:00	Wed	9.30	4.53	982675.79	0.00013381
453	19-Apr-07	4	19	20:00:00	Thu	8.40	5.43	904035.97	0.0001231
477	20-Apr-07	4	20	20:00:00	Fri	9.40	4.43	872456.42	0.0001188
501	21-Apr-07	4	21	20:00:00	Sat	12.00	1.83	868652.13	0.00011828
525	22-Apr-07	4	22	20:00:00	Sun	10.70	3.13	978468.44	0.00013324
549	23-Apr-07	4	23	20:00:00	Mon	14.00	0.00	905423.46	0.00012329
573	24-Apr-07	4	24	20:00:00	Tue	11.30	2.53	855222.78	0.00011645
597	25-Apr-07	4	25	20:00:00	Wed	8.10	5.73	1006039.66	0.00013699
621	26-Apr-07	4	26	20:00:00	Thu	10.10	3.73	1008869.35	0.00013738
645	27-Apr-07	4	27	20:00:00	Fri	12.40	1.43	901938.72	0.00012282
669	28-Apr-07	4	28	20:00:00	Sat	10.60	3.23	953988.34	0.0001299
693	29-Apr-07	4	29	20:00:00	Sun	11.40	2.43	1092909.55	0.00014882
717	30-Apr-07	4	30	20:00:00	Mon	13.00	0.83	909639.27	0.00012386
741	01-May-07	5	1	20:00:00	Tue	10.90	2.93	904926.72	0.00012322
765	02-May-07	5	2	20:00:00	Wed	9.50	4.33	1002777.59	0.00013655
789	03-May-07	5	3	20:00:00	Thu	10.30	3.53	869735	0.00011843
813	04-								10646
837	05-								13745
861	06-								12704
885	07-								12511
909	08-								12237
933	09-								13032
957	10-								11928
981	11-								11755
1005	12-May-07	5	12	20:00:00	Sat	14.60	0.00	910238.3	0.00012395
1029	13-May-07	5	13	20:00:00	Sun	12.80	1.03	937256.14	0.00012762
1053	14-May-07	5	14	20:00:00	Mon	13.10	0.73	893212.18	0.00012163
1077	15-May-07	5	15	20:00:00	Tue	18.90	0.00	851333.11	0.00011592
1101	16-May-07	5	16	20:00:00	Wed	14.70	0.00	976403.55	0.00013296
1125	17-May-07	5	17	20:00:00	Thu	13.70	0.13	879588.63	0.00011977
1149	18-May-07	5	18	20:00:00	Fri	12.50	1.33	863734.88	0.00011761

Hourly observations of BPT:

At 2000, BPT = 13.8°C





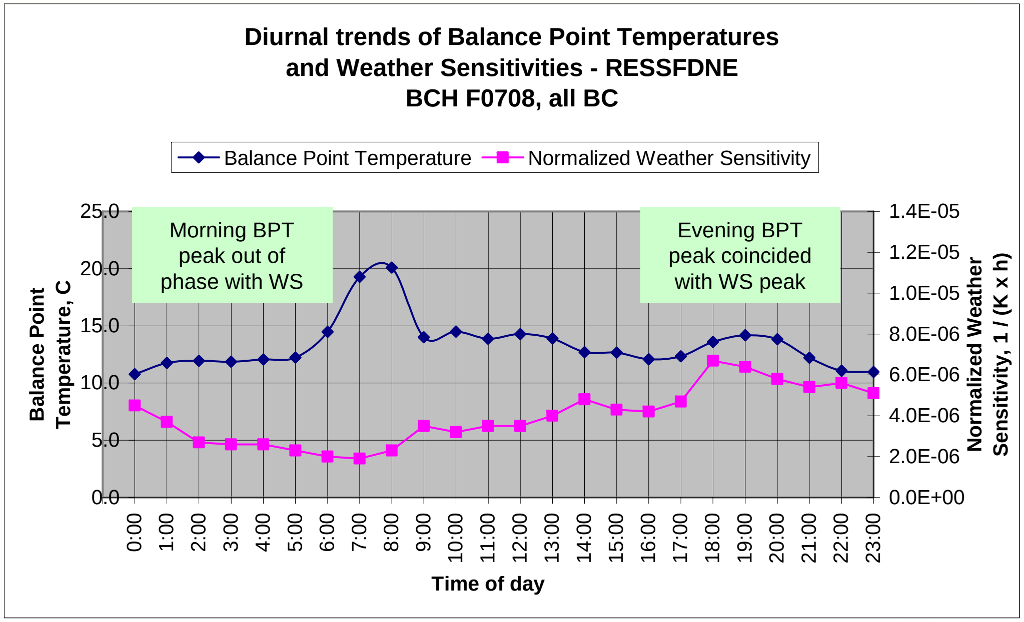
wxsensdata 1900 | wxsensdata 2000 | wxsensdata 2000 heat | wxsensdata 2000 cool | wxsensdata 2100

Filter Mode

Diurnal Trends of Balance Point Temperatures and Weather Sensitivities

RESSFDNE

Time	BPT, °C	WS, 1 / (K x h)
0:00	10.8	4.5E-06
1:00	11.8	3.7E-06
2:00	11.9	2.7E-06
3:00	11.9	2.6E-06
4:00	12.1	2.6E-06
5:00	12.2	2.3E-06
6:00	14.5	2.0E-06
7:00	19.3	1.9E-06
8:00	20.1	2.3E-06
9:00	14.0	3.5E-06
10:00	14.5	3.2E-06
11:00	13.9	3.5E-06
12:00	14.3	3.5E-06
13:00	13.9	4.0E-06
14:00	12.7	4.8E-06
15:00	12.7	4.3E-06
16:00	12.1	4.2E-06
17:00	12.3	4.7E-06
18:00	13.6	6.7E-06
19:00	14.2	6.4E-06
20:00	13.8	5.8E-06
21:00	12.2	5.4E-06
22:00	11.1	5.6E-06
23:00	11.0	5.1E-06
Average =	**13.4**	**4.0E-06**



Weather sensitivity (WS) is observed to be approximately 180° out of phase with BPT except from mid-afternoon until 2200

BC hydro FOR GENERATIONS

Summary

- Weather sensitivity of electrical energy consumption in buildings originates from thermostatically controlled systems and appliances
- Balance Point Temperature for the BC Hydro system, all seasons, was 15°C
- Average hourly Balance Point Temperatures for electrically heated residential buildings, all seasons, were approximately 18°C
- Balance Point Temperatures for all site types were generally lowest in Winter, highest in Summer, and intermediate in the Shoulder season
- RESSFDE base load 160,674 kWh/h compared to RESSFDNE base load 795,535 kWh/h
- Relative weather sensitivity is equally high in Winter and the Shoulder months of April, May, September, and October. Sensitivity is lowest in Summer
- Domiciles such as hotels, nursing homes, and residential apartments/houses/duplexes are usually the most weather sensitive buildings
- RESSFDE bulk normalized weather sensitivity 8×10^{-6} per K ·h compared to RESSFDNE bulk normalized weather sensitivity of 2×10^{-6} per K ·h
- RESSFDE balance point temperature was 16.7 °C compared to RESSFDNE balance point temperature of 14.7 °C . The lower balance point temperature of RESSFDNE reflects the fact of a larger heating energy input from non-electric sources (usually natural gas)
- Balance Point Temperatures and Weather Sensitivities are not constant but exhibit diurnal trends
- Next steps: Case studies of other site types like those done for RESSFDE and RESSFDNE

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