

Small Commercial (1) Demand Analyzer™ Energy Analysis Input Form (rev Oct 2002)

(Numbers in parentheses refer to Notes at end of form)

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|--|---|---|---|---|---|--------------------|
| Building & Dealer Information | Film Installation Company Name | | Installation Company Contact Name and Phone | | | |
| | Name of Building | | Building Contact Name | | | |
| | Building Address | | Building Contact Phone | | | |
| | City - State - Zip | | Nearest Large City (2): | | | |
| General | Type of Building (choose from list at bottom of page 2) (3): | | | Year building was built (4): | | |
| | Total Building Floorspace Area (5): (total of all floors) | | Square Ft / Sq Meters (circle appropriate units) | | Number of Stories/Floors (6): | |
| Utility Rates And Annual Energy Costs | Electricity Cost per kilowatt hour (7): (Typically 0.03 to 0.20 US \$ per kwhr) | | | Electricity Cost per KW Demand (8): | | |
| | Natural Gas Cost per therm (9): (Typically 0.35 to 1.00 US \$ per therm) | | | Fuel Oil Cost per gallon (10): | | |
| | Annual Costs (11): Electricity _____ Natural Gas _____ Fuel Oil _____ | | | | | |
| Thermostat Settings (12) | Heating Temperature: Day _____ Night _____ | | | Cooling Temperature: Day _____ Night _____ | | |
| | | | | | | |
| Envelope | Orientation (13) | | North (13) | East (13) | South (13) | West (13) |
| | Windows Shaded by Adjacent Building (Adjacent Shading) (14) | | Yes / No | Yes / No | Yes / No | Yes / No |
| | Window Area (15) (circle appropriate units) | | _____ Sq Ft / Sq m | _____ Sq Ft / Sq m | _____ Sq Ft / Sq m | _____ Sq Ft / Sq m |
| | Can this exposure be applied to this exposure? (Circle Yes or No)(15) | | Yes / No | Yes / No | Yes / No | Yes / No |
| | Window Setback from building exterior (16) (circle appropriate units) | | _____ Ft / m | _____ Ft / m | _____ Ft / m | _____ Ft / m |
| | Window Shading Used (Drapes or Blinds) (17) | | Yes / No | Yes / No | Yes / No | Yes / No |
| Window Glass Type (18) (circle appropriate pane thickness, number of panes, glass color, if reflective, and if Low-e windows -circle Low-E type) | | 1/8 3/16 1/4 3/8 1/2 Single / Double / Triple Clear / Gray / Bronze / Green / Blue Reflective? Yes / No Low-E / Hi Perf Low-E | 1/8 3/16 1/4 3/8 1/2 Single / Double / Triple Clear / Gray / Bronze / Green / Blue Reflective? Yes / No Low-E / Hi Perf Low-E | 1/8 3/16 1/4 3/8 1/2 Single / Double / Triple Clear / Gray / Bronze / Green / Blue Reflective? Yes / No Low-E / Hi Perf Low-E | 1/8 3/16 1/4 3/8 1/2 Single / Double / Triple Clear / Gray / Bronze / Green / Blue Reflective? Yes / No Low-E / Hi Perf Low-E | |
| "Hi Performance Low-E" refers to Low-E windows with substantial summer heat rejection properties, such as Cardinal Low-E Squared, PPG Solarban and Sungate 1000, Pilkington/LOF Solar E, or Viracon SolarScreen 2000 windows. (See CPFilms Tech Bulletin 41F). | | | | | | |

(4) Demand Analyzer uses this information to determine building construction characteristics that affect building energy consumption, such as type of heating and cooling system and efficiency, amount of insulation in walls and roof, etc.

(5) To create an accurate energy analysis model of a building requires an accurate estimate of the building floor space. Energy usage in a building is obviously closely related to the size of the building, so an accurate value is required to create an accurate model. Also be sure to indicate, by circling the appropriate units, whether the floor space shown is square feet or square meters.

(6) To create an accurate energy analysis model of a building requires an accurate estimate of the number of stories or floors in a building. Energy usage in a building is obviously closely related to the size of the building, so an accurate value is required to create an accurate model.

(7) Most medium to large commercial buildings are charged a kilowatt hour (kwhr) charge AND a kilowatt (KW) demand charge. However, the charges for each often varies by time of day and time of year. To provide a reasonable estimate enter the average cost per kwhr. To do this, you will need at least 3 months of electric bills, and preferably 12 months (you will need the total annual electricity charges for 12 months below also, see Note 11). Determine the total dollar charges for electricity for the bills you have (call this number A), and total the kwhr shown on the exact same bills (call this number B). Divide A by B. You should arrive at a cost between \$0.03 and \$0.20 per kwhr. If you calculate a number outside of this range, recheck your numbers and math (and be sure to use at least 3 months of bills). For example, if the total dollar charges for the bills used is \$300,000 and the total kwhr for the same bills is 3,700,000, the average cost per kwhr would be 300,000 divided by 3,700,000 = \$0.081

(8) If a relatively simple electricity rate schedule is used, where a single cost per kilowatt hour (kwhr) and a single cost per kilowatt (KW) demand is charged, enter the cost per KW demand here (typically \$3.00 to \$15.00 per KW). If kwhr and KW demand charges vary based on time of year and time of day, it is best to determine the overall average cost per kwhr (see Note 7) and use only that figure.

(9) Enter the average cost per therm of natural gas. Use at least 3 months of natural gas bills (preferably 12 months) to determine this value. Add the total dollar charges for all months (call this number A). Add the total therms used for the same months (call this number B). Divide A by B to get the dollar cost per therm. Your value should be in the \$0.35 to \$1.00 range. If not recheck your numbers and math. If the bill uses the units of "mcf" for the amount of natural gas, rather than therms, you will need to divide your final cost per mcf by 10 to get the cost per therm. For example, if your determine the average cost per mcf to be \$6.50, the average cost per therm would be \$0.65. Also, the cost per therm = Cost per cubic meter x 2.832

(10) Enter the average cost for fuel oil in dollars per gallon, if used as the primary heating fuel. As with electricity and natural gas, use the average value from several months (at least 3 and preferably 12 months). Demand Analyzer cannot use fuel oil as a heating fuel source, so it is necessary to convert this price to an equivalent price for natural gas. See section 6D in the "User's Guide AIMCAL Version" (see note on inside of program CD cover on how to access this User's Guide) or contact CPFilms Technical Services for more information.

(11) The annual costs for each type of energy is required to create an accurate Demand Analyzer model. After creating the initial model of the building without film, create the graph to show the annual cost for each fuel (File, New, Graph, Annual Cost). Compare the cost for each fuel to the actual values from the input form. You may need to adjust certain values in your model to get your model annual cost totals for each fuel to match the actual values. See the FAQ section for Demand Analyzer on the LLumar Technical web site (www.llumartech.com) on how to do this. Be sure to create a model without film that closely reflects (within 15%) the actual annual costs BEFORE creating models with film.

(12) These values represent the temperatures in the building for heating and cooling, during daytime and night-time hours. In Demand Analyzer, setback temperatures are the temperatures for unoccupied hours (night-time hours). The maximum heating temperature is 73 deg F (22.7 deg C) and the minimum cooling temperature is 74 deg F (23.3 deg C).

(13) For exposures that do not face true N, S, E or W divide the window square footage evenly between the appropriate adjacent N, S, E or W exposures. For example, for a SW exposure, include half of the SW square footage in the S column and half of the SW square footage in the W column.

(14) If there is a building that shades one or more of the exposures for the building being analyzed, circle yes where appropriate. For example, if there is a building to the East that shades all or most of the modeled building, then you would circle yes under East. To shade all or most of an exposure, the adjacent building will need to be of equal height (number of floors). Circle yes only if more than 1/2 of the modeled building's exposure is substantially shaded during the day.

(15) Enter the area for all windows on each exposure, even if film is not to be applied to a particular exposure. Circle whether the area is in square feet or square meters. Then, indicate which exposures are to have film applied by circling Yes or No. It is necessary to know the glass area for all exposures to create an accurate Demand Analyzer model.

(16) The "window setback" indicates that the window is either setback into the building from the building exterior (recessed into the building) or that there is an overhang above the window that shades the window.

(17) Indicate whether interior window shading is used (drapes, curtains, or blinds) for each exposure. If interior shading devices are used, in Demand Analyzer use a Window Shading (SC) value of 0.80. If no interior shading devices are used, use a Window Shading (SC) value of 1.15 in Demand Analyzer.

(18) For the windows on each exposure, indicate precisely what type of windows exist by circling the appropriate: pane thickness, number of panes, whether clear or tinted (and color of tint), whether reflective, and if high performance solar control low-e or standard low-e coating is used.

(19) To create an accurate model of the building requires that detailed information about the type of heating, ventilating and air-conditioning (HVAC) system be determined. This information includes the type of air distribution system (variable or constant volume), if an air-side economizer is in use, the type of heating system, the type of chiller used to create chilled water for cooling, and the type of cooling tower. You should check with building engineering or maintenance personnel to determine which description most closely matches the HVAC system in the building.

(20) Indicate which films are to be used in the energy analysis, such as N1020, R20, R35 etc. Use a maximum of three films.

(21) Indicate the total amount of film to be installed. This area should match the window area that is to be filmed for all exposures from page 1 of the form. Check to make sure both totals match. Indicate whether square feet or square meters.

(22) Indicate the installed price per square foot (or square meter) for each film. Be sure to include the effect of any utility rebate in this cost. For example, if your quote is \$3.50 per square foot, but a utility rebate of \$0.50 per square foot will be in effect, show \$3.00.

(23) Indicate the total quote for each film, installed. Multiply the total film square footage (square meters) by the film cost per square foot (square meter) for each film.