



# Window Film



## Demand Analyzer Fast Food Restaurant Payback Analysis

Demand Analyzer utilizes the U.S. Department of Energy's sophisticated DOE-2 building energy analysis software for estimating energy savings for building projects. DOE-2 is a whole-building analysis program that calculates energy use and operating cost for each hour of the year, using typical weather data for the selected location. DOE-2 is widely used by consulting engineers for the design of energy-efficient buildings; by researchers for impact analysis of new heating, cooling and lighting technologies; and by state and federal agencies for developing energy-efficiency standards. DOE-2 is internationally recognized for the accuracy of its energy analysis algorithms as well as its ability to model a variety of buildings, HVAC systems and energy conservation measures.

Additional information about ITEM Systems and Demand Analyzer is available at <http://www.halcyon.com/byrne> and DOE-2 information can be found at <http://gundog.lbl.gov>.

The energy savings are based on methods using the U.S. Department of Energy's DOE-2 energy simulation program. The methods used are believed to be reliable, but the accuracy and completeness thereof is not and cannot be guaranteed. Neither the party presenting this report, AIMCAL, the referenced film manufacturer, or the film seller assumes liability in connection with the inability to realize the estimated energy savings shown.

1. To begin the Energy Simulation Process, please refer to the inputs below and answer each line item. Note, some questions have multiple choices, please check or circle the correct answer.

**When complete fax to 3M Technical Service Attn:**

**This section to be filled out by the 3M Window Film Dealer**

Category (Dealer Name) \_\_\_\_\_ Dealer Fax \_\_\_\_\_  
 Dealer Address \_\_\_\_\_ Dealer Email \_\_\_\_\_  
 \_\_\_\_\_ Description (Project Name) \_\_\_\_\_  
 Dealer Phone \_\_\_\_\_

**Films to be analyzed**

**Cost per ft<sup>2</sup>**

Films to be analyzed	Cost per ft <sup>2</sup>

**This section to be filled out by the building owner/facility engineer**

**General Information**

2. Building type
  - a. If this is not a fast food restaurant please refer to the correct Demand Analyzer checklist
3. Building Age
  - a. Pre 1978
  - b. 1978-1992
  - c. 1992-Present
4. Climate Zone (Project City) \_\_\_\_\_
5. Total Floor Area (All Floors) \_\_\_\_\_
6. Aspect Ratio: (Building length east-west)/(Building length north-south. For example, a square building this is 1, for a rectangular building take the length along the east west side and divide that length by the north south length) \_\_\_\_\_
7. Building Azimuth/Building Orientation (example, a rectangular building with each face pointing directly north south east and west would be 0degrees, if the building is turned clockwise so that north faces north-east, it would be 45 degrees) \_\_\_\_\_
8. Operating Schedule (Circle: Standard or 24 hrs/day)

**Utility Rates**

**Electric**

**Gas**

- |  |  |
|--|--|
| 9. Energy cost per kWh _____             | 15. Energy cost per therm _____            |
| 10. Demand cost per kW _____             | 16. Fixed cost per month _____             |
| 11. Minimum demand cost per kW _____     | 17. Minimum cost per month _____           |
| 12. Fixed cost per month _____           | 18. Maximum effective rate per therm _____ |
| 13. Minimum cost per month _____         |  |
| 14. Maximum effective rate per kWh _____ |  |

**19. Required: Annual Energy Cost for building** \_\_\_\_\_

**20. \*\*\*Also please attach latest energy bill**

**21. Occupant Density**

- a. Dining \_\_\_\_\_ ft<sup>2</sup>/person
- b. Kitchen \_\_\_\_\_ ft<sup>2</sup>/person
- c. Entrance \_\_\_\_\_ ft<sup>2</sup>/person
- d. Restrooms \_\_\_\_\_ ft<sup>2</sup>/person

22. Indoor Occupancy Sensors (Circle yes or no)

23. Indoor lighting

- a. Dining \_\_\_\_\_ W/ ft<sup>2</sup>
- b. Kitchen \_\_\_\_\_ W/ ft<sup>2</sup>
- c. Entrance \_\_\_\_\_ W/ ft<sup>2</sup>
- d. Restrooms \_\_\_\_\_ W/ ft<sup>2</sup>

24. Outdoor lighting type

- a. Mercury Vapor Lamps
- b. High Pressure Sodium Lamps
- c. Metal Halide Lamps

25. Electrical equipment

- a. Dining \_\_\_\_\_ W/ ft<sup>2</sup>
- b. Kitchen \_\_\_\_\_ W/ ft<sup>2</sup>
- c. Entrance \_\_\_\_\_ W/ ft<sup>2</sup>
- d. Restrooms \_\_\_\_\_ W/ ft<sup>2</sup>

**Thermostat Setting**

26. Heating Setback \_\_\_\_\_ °F

28. Dining Heating \_\_\_\_\_ °F

27. Cooling Setback \_\_\_\_\_ °F

29. Dining Cooling \_\_\_\_\_ °F

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30. Ceiling roof insulation (R-value Typically R-11, with a typical upgrade to R-19) \_\_\_\_\_

31. Roof Absorbance (This is a value between 0 and 1, with a typical value of 0.8, lighter smoother roofs approach 0, with darker rougher roofs closer to 1) \_\_\_\_\_

32. Air Curtain Entrance (Circle yes or no)

**Exterior Shading**

33. North (Check yes or no)

35. South (Check yes or no)

34. East (Check yes or no)

36. West (Check yes or no)

**Window Area ft<sup>2</sup>**

37. North \_\_\_\_\_ ft<sup>2</sup>

39. South \_\_\_\_\_ ft<sup>2</sup>

38. East \_\_\_\_\_ ft<sup>2</sup>

40. West \_\_\_\_\_ ft<sup>2</sup>

**Window Setback ft**

41. North \_\_\_\_\_ ft

43. South \_\_\_\_\_ ft

42. East \_\_\_\_\_ ft

44. West \_\_\_\_\_ ft

**Window Shading/Window Treatments** (The number here should be the % of time that the window treatments are open, if you have no blinds/drapes, or the blinds/drapes are always open this number should be 1, if the blinds/drapes are always closed this number should be 0)

45. North \_\_\_\_\_

47. South \_\_\_\_\_

46. East \_\_\_\_\_

48. West \_\_\_\_\_

**Window Glass Type** (ex 1/4" tinted insulated, or 1/8" single pane clear)

49. North \_\_\_\_\_

51. South \_\_\_\_\_

50. East \_\_\_\_\_

52. West \_\_\_\_\_

53. Oven Type

- a. Standard Gas
- b. Gas with Electronic Ignition
- c. Electric Convection
- d. Steam

54. Infrared Fryer (Circle yes or no)

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55. Domestic hot water heater type

- a. Electric
- b. Gas
- c. Point of use
- d. Heat pump

56. Domestic hot water heater efficiency \_\_\_\_\_

57. Domestic hot water tank insulation (Circle yes or no)

58. Domestic hot water pipe insulation (Circle yes or no)

59. Domestic hot water circulation pump timeclock (Circle yes or no)

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60. Ventilation rate \_\_\_\_\_cfm/person

61. Duct insulation (Circle yes or no)

62. Air side economizer (Circle yes or no)

63. Kitchen Exhaust

- a. Standard Exhaust Hood
- b. Grease Extractor Hood
- c. Makeup Air Exhaust Hood
- d. Smoke Sensor Activated Hood
- e. Makeup Air Heat Exchanger

64. HVAC system clocks (Circle yes or no)

65. Energy management system (Circle yes or no)

66. Deadband thermostats (A deadband thermostat provides a range or a band of temperatures where neither the heating nor the cooling systems of an HVAC system operate. This type of thermostat prevents heating and cooling equipment from operating simultaneously, in immediate succession, or when room air characteristics require no conditioning of the air) (Circle yes or no)

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67. Heating system

- a. Gas Furnace
- b. Electric Furnace
- c. Room Heat Pump
- d. Central Heat Pump
- e. Gas Heat Pump

68. Cooling system

- a. None
- b. Central Air
- c. Packaged Terminal A/C

69. Cooling tower

- a. None
- b. Centrifugal fans
- c. Propeller fans
- d. Two-Speed propeller fans
- e. Variable speed propeller fans

70. Heating system efficiency \_\_\_\_\_

71. Cooling system efficiency \_\_\_\_\_

72. Infrared space heaters (Circle yes or no)

73. Indirect evaporative pre-cooling (An evaporative pre-cooler uses a wetted filter positioned on the suction side of the condenser fan. The filter is continuously kept wet. Air is drawn through the filter and across the condenser coils by the condenser fan. By evaporating water into the ambient air before it passes across the condenser coils, the ambient air is cooled, causing lower condenser temperatures.) (Circle yes or no)