****

**FEDERAL FACILITY ASSESSMENT GUIDE  
Energy Audit Data Collection Sheet**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Organizational Information** | | | | | |
| Name of Organization |  | Name of Contact |  | Position |  |
| Contact Email |  | Phone Number |  |

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Site Data** | | | | | | | | | | |
| Building Name | Address | Building Square Footage (ft2) | Age of Building (years) | Date of Last Major Renovation | Purpose of Building | Number of Floors | Daily Operational Hours  *(e.g. M-F 8-6, Sa 10-4)* | Days of Use per Week | Name of Utility Company | Total Number of Occupants |
|  |  |  |  |  |  |  |  |  |  |  |

Please check all that apply:

|  |  |
| --- | --- |
|  | This building is leased |
|  | This building is owned |
|  | The organization receives monthly bills based on accurate meter readings |
|  | Meters are read regularly by on-site staff |
|  | Bills are compared to monthly meter readings on a regular basis |
|  | A Building Automation System or Energy Management Control System is in place and used to track utility data regularly |
|  | The building is sub-metered |
|  | The building has automated 15 minute interval or SMART meters |
|  | If the building is leased: |
|  | When is the lease up for renewal (date/year)?\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
|  | How long does the lease contract last (years)?\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
|  |  |
|  |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Building Data** | | | | |
| Floor Name or Number | Activity Type  *(e.g. laboratory, executive offices, reception, etc)* | Floor Square Footage or % of Building Area  (ft2 or %) | Number of Occupants | Daily Operational Hours  *(e.g. M-F 8-6, Sa 10-4)* |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Annual Utility Consumption** | | | | | | | | | | | |
| Building Name |  | | | | | | | | | | |
| Month | Electricity (kWh) | Electricity Cost ($) | Electricity Rate ($/kWh) | Natural Gas (MMBtu\*) | | Natural Gas Cost ($) | Natural Gas Rate ($/MMBtu) | | Water (Gallons) | | Water Cost ($) |
|  |  |  |  |  | |  |  | |  | |  |
|  |  |  |  |  | |  |  | |  | |  |
|  |  |  |  |  | |  |  | |  | |  |
|  |  |  |  |  | |  |  | |  | |  |
|  |  |  |  |  | |  |  | |  | |  |
|  |  |  |  |  | |  |  | |  | |  |
|  |  |  |  |  | |  |  | |  | |  |
|  |  |  |  |  | |  |  | |  | |  |
|  |  |  |  |  | |  |  | |  | |  |
|  |  |  |  |  | |  |  | |  | |  |
|  |  |  |  |  | |  |  | |  | |  |
|  |  |  |  |  | |  |  | |  | |  |
| **2009 Totals** |  |  |  |  | |  |  | |  | |  |
| Electricity Usage (Btu) | Natural Gas Usage (Btu) | | Total Btu | | Energy Use Intensity (Btu/ft2) | | | Total Water | | Water (gallons/ft2) | |
|  |  | |  | |  | | |  | |  | |

\*If Natural Gas is listed on utility bills as CCF or Therms, please refer to the conversion table.

Calculate the Energy Use Intensity by converting electricity from kWh to Btu and Natural gas from MMBtu into Btu (as shown below), then total these two numbers and divide by the square footage of the building for energy intensity.

* Electricity Usage (Btu) = TOTAL kWh x 3,413 Btu/kWh = \_\_\_\_ Btu
* Natural Gas Usage (Btu) = TOTAL MMBtu x 1,000,000 Btu/MMBtu = \_\_\_\_ Btu
* Total Energy Use (Btu) = Electricity Btu + Natural Gas Btu = \_\_\_\_ Btu
* **Energy Use Intensity (Btu/ft2)** = Btu / ft2 = ***\_\_\_\_ Btu/ft2***

|  |  |
| --- | --- |
| *Where other fuel types are being used, please explain where and why it is being used:* | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| *How much of the additional fuel type is used per year (quantity and units)* | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Lighting** | | | | | | | | |
| Floor Name or Number | Location description  (near window, internal office, hallway, etc). | Lamp Type | Ballast Type | Wattage | Total Number of lamps | Number of hours lights are left on each day | Total kWh per day | How are lights controlled? |
|  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |

More information about identifying bulb types is available in the guidance documents.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Heating, Ventilation, and Air Conditioning Systems** | | | | | | | | |
| What type of HVAC system does the building have? (e.g. constant volume, multi-zone, VAV, etc) | What fuel type does this system use? | How is the HVAC system controlled  (e.g. manually, DDC system, etc)? | What are the operational setpoints? | What type of chilled water system does the building have, where relevant? (e.g. rotary screw chillers with cooling towers) | How old is the chilled water system? | What is the capacity of the system? | What are the operational setpoints? | Do either of these systems have weather optimization sensors? If so, which systems and what brand of sensor? |
|  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |

Who is responsible for managing and trouble-shooting the control system?\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Are there any recurring or major occupant complaints about being too hot, too cold, etc?\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

What energy efficiency efforts have been completed, started or planned?\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
  
Are any capital improvement projects planned? If so, what are they and how will they affect the energy use of the building? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
  
\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Please select what is currently installed at the building:

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Groundsource Heat Pumps |  | Segregated recycling |  | Energy Efficient Lighting |  | Other: Please specify | |
|  | Solar hot water |  | Co-mingled recycling |  | Lighting Controls |  |  | |
|  | Solar PV panels (electric) |  | Composting |  | Insulation |  |  | |
|  | Wind turbines |  | Anaerobic digestion |  | Underfloor heating |  |  | |
|  | Micro-hydro |  | Sustainable procurement |  | On-demand hot water heater |  |  | |
|  | Geothermal |  | Energy efficient windows |  | Weather optimized heating sensor |  |  | |
|  | Gray-water systems |  | Green/living roof |  | Low flush toilets |  |  | |
|  | Efficient HVAC systems |  | Rainwater harvesting |  | Waterless urinals |  |  | |
|  | External shading |  | Porous pavement |  | Low flow faucets |  |  | |
|  |  |  |  |  |  |  |  | |
|  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **PLUG LOADS** | | | | | | | | | |
| Equipment Type | Manufacturer | Model or Size | Total Number | Wattage | Hours of Use per Day | Days of Use per Year | Total kWh | How is equipment controlled? | Description, Observations or Notes |
| *Vending machine* |  |  |  |  |  |  |  |  |  |
| *Computer* |  |  |  |  |  |  |  |  |  |
| *Printer* |  |  |  |  |  |  |  |  |  |
| *Computer Screen* |  |  |  |  |  |  |  |  |  |
| *Refrigerator* |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |

Please specify where you feel there is room for improvement either in efficiency measures or renewable energy technologies: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Please check off the information that is being provided to NREL:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Copy of utility bills | | | | |
|  | Screen shot of EMCS or DDC control system | | | | |
|  | Copies of previous energy audit reports | | | | |
|  | Copies of action plans or capital improvement plans | | | | |
|  | Copies of any M&V plans | | | | |
|  | Copies of an O&M contract (if outsourced) | | | | |
|  | Copies of nameplates from HVAC and chiller equipment | | | | |
|  |  |  |  |  |  | |
|  |  |  |  |  |  | |
|  |  |  |  |  |  | |
|  |  |  |  |  |  | |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Building Envelope** | | | | |
| Building Element | Condition  (Excellent, Good, Poor) | Type | Observations | Possible Energy Saving Opportunities |
| *Windows* |  |  |  |  |
| *Doors* |  |  |  |  |
| *Roof* |  |  |  |  |
| *Walls* |  |  |  |  |
| *Floors* |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

**Operations and Management**

Does the organization have an environmental policy?\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Does the organization have an energy policy?\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Does the organization have an environmental or energy manager?\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Does the organization review these policies on an annual basis and establish reduction targets?\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Do organizational stakeholders or shareholders value environmental and social responsibility?\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Conversion Table**

To convert from cubic feet (CCF) to million British thermal units (MMBtu) multiply the CCF by 0.1. To convert from therms of natural gas to Btu multiply the therms by 100,000. Other conversions are shown below:

|  |  |
| --- | --- |
| **Energy Content of Various Fuels** | |
| 1 kilowatt hour of electricity | 3,413 Btu |
| 1 cubic foot of natural gas | 1,008 to 1,034 Btu |
| 1 therm of natural gas | 100,000 Btu |
| 1 gallon of crude oil | 138,095 Btu |
| 1 barrel of crude oil | 5,800,000 Btu |
| 1 gallon of residual fuel oil | 149,690 Btu |
| 1 gallon of gasoline | 125,000 Btu |
| 1 gallon of diesel | 129,500 Btu |
| 1 gallon of ethanol | 84,400 Btu |
| 1 gallon methanol | 62,800 Btu |
| 1 gallon of kerosene or light distillate oil | 135,000 Btu |
| 1 gallon of middle distillate or diesel fuel oil | 138,690 Btu |
| 1 gallon of liquefied petroleum gas (LPG) | 95,475 Btu |