

## 6.9 Miscellaneous Energy Uses

Miscellaneous energy uses are defined as those that may be treated separately since they have little or no interaction with the conditioned thermal blocks or the HVAC systems that serve them.

### 6.9.1 Water Heating

Water heating systems shall always be modeled for both the proposed design and baseline building when the proposed building is expected to have a water heating load, even if no water heating is shown on the plans or specifications for the proposed design. In such instances, an electric resistance system shall be modeled for both the proposed design and baseline building, meeting the efficiency requirements of the baseline standard.

When the construction documents show a water heating system, the layout and configuration of the baseline building system shall be the same as the proposed design, e.g. the baseline building shall have the same number of water heaters and the same distribution system.

#### System Loads and Configuration

##### Water Heating System Name

<i>Applicability</i>	All water heating systems
<i>Definition</i>	A unique descriptor for each water heating system. A system consists of one or more water heaters, a distribution system, an estimate of hot water use, and a schedule for that use. Nonresidential buildings will typically have multiple systems, perhaps a separate electric water heater for each office break room, etc. Other building types such as hotels and hospitals may have a single system serving the entire building.
<i>Units</i>	Text, unique
<i>Input Restrictions</i>	Where applicable, this should match the tags that are used on the plans such that a plan reviewer can make a connection.
<i>Baseline Rules</i>	The naming convention for the baseline building system shall be similar to the proposed design.

##### Water Heating Peak Use

<i>Applicability</i>	All water heating systems, required
<i>Definition</i>	<p>An indication of the peak hot water usage (e.g. service to sinks, showers, and kitchen appliances, etc.). When specified per occupant, this value is multiplied by design occupancy density values and modified by service water heating schedules to obtain hourly load values which are used in the simulation.</p> <p>Peak consumption is commonly specified as gallons per hour per occupant, dwelling unit, hotel room, patient room, or floor area. If consumption is specified in gallons per hour, then additional inputs would be needed such as supply temperature, cold water inlet temperature, etc.</p> <p>It is also common to specify peak use as a thermal load in Btu/h. In the latter case, there is an implied assumption for the cold water inlet temperature, supply temperature, distribution losses, and other factors. The thermal load does not include conversion efficiencies of water heating equipment.</p>
<i>Units</i>	Btu/h or gallons/h
<i>Input Restrictions</i>	For the purpose of federal tax deductions, peak use shall be specified as a thermal load using the California 2005 ACM values from Appendix B, Table 5. For the purpose of green building ratings and Design to Earn ENERGY STAR, the inputs from Appendix B are default values, but other values may be used with justification.
<i>Baseline Rules</i>	Hot water consumption or load in the baseline building shall be the same as the proposed design, except in cases where a specific measure is specified for the proposed design that will reduce water consumption. Examples of such measures include: low-flow terminal devices or controls, alternative sanitizing technologies, or heat recovery laundry or showers drains.

##### Water Heating Schedule

<i>Applicability</i>	All water heating systems, required
<i>Definition</i>	A fractional schedule reflecting the time pattern of water heating use. This input modifies the water heating peak use, described above.
<i>Units</i>	Data structure: schedule, fractional
<i>Input Restrictions</i>	For the purpose of federal tax deductions, the schedules for the California 2005 ACM from Appendix B, Table 7 shall be used. For the purpose of green building ratings and Design to Earn ENERGY STAR, the inputs from Appendix B, Table 7 are default values, but other values may be used with justification.

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<i>Baseline Rules</i>	Hot water schedules for the baseline building shall be the same as the proposed design, except in cases where a specific measure is specified for the proposed design that will reduce water consumption and the impact of the measure can be best approximated through an adjustment to the schedule. In general, such measures would be addressed through an adjustment to the water heating, peak use (see above).
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## Water Heating System Configuration

<i>Applicability</i>	All water heating systems, required
<i>Definition</i>	The configuration and layout of the water heating system, including the number of water heaters; the size, location, length and insulation of distribution pipes; recirculation systems and pumps; and any other details about the system that would affect the energy model.
<i>Units</i>	Data structure
<i>Input Restrictions</i>	None
<i>Baseline Rules</i>	The baseline building shall have the same configuration and layout as the proposed design.

## Water Heaters

This section describes the building descriptors for water heaters. Typically, a building will have multiple water heating systems and each system can have multiple water heaters, so these building descriptors may need to be specified more than once.

## Water Heater Name

<i>Applicability</i>	All water heaters
<i>Definition</i>	A unique descriptor for each water heater in the system. Some systems will have multiple pieces of equipment, for instance a series of water heaters plumbed in parallel or a boiler with a separate storage tank.
<i>Units</i>	Text, unique
<i>Input Restrictions</i>	Where applicable, this should match the tags that are used on the plans such that a plan reviewer can make a connection.
<i>Baseline Rules</i>	The naming convention for the baseline building system shall be similar to the proposed design.

## Water Heater Type and Size

<i>Applicability</i>	All water heaters
<i>Definition</i>	<p>This building descriptor includes information needed to determine the criteria from baseline standards. The choices are listed below. See Table 7.2.2 of ASHRAE Standard 90.1-2001 or Table 7.8 of ASHRAE Standard 90.1-2007 for more detail.</p> <ul style="list-style-type: none"><li>• Electric water heaters (storage and instantaneous)<ul style="list-style-type: none"><li>◦ Small (<math>\leq 12</math> kW)</li><li>◦ Large (<math>&gt; 12</math> kW)</li></ul></li><li>• Heat pump</li><li>• Gas storage water heaters<ul style="list-style-type: none"><li>◦ Small (<math>\leq 75,000</math> Btu/h)</li><li>◦ Medium (<math>&gt; 75,000</math> and <math>\leq 155,000</math> Btu/h)</li><li>◦ Large (<math>&gt; 155,000</math> Btu/h)</li></ul></li><li>• Gas instantaneous water heaters<ul style="list-style-type: none"><li>◦ Small (<math>&gt; 50,000</math> and <math>&lt; 200,000</math> Btu/h)</li><li>◦ Large (<math>\geq 200,000</math> Btu/h)</li></ul></li><li>• Oil storage water heaters<ul style="list-style-type: none"><li>◦ Small (<math>\leq 105,000</math> Btu/h)</li><li>◦ Medium (<math>&gt; 105,000</math> and <math>\leq 155,000</math> Btu/h)</li><li>◦ Large (<math>&gt; 155,000</math> Btu/h)</li></ul></li><li>• Oil instantaneous water heaters<ul style="list-style-type: none"><li>◦ Small (<math>\leq 210,000</math> Btu/h)</li><li>◦ Large (<math>&gt; 210,000</math> Btu/h)</li></ul></li><li>• Gas hot water supply boiler</li><li>• Oil hot water supply boiler</li></ul>
<i>Units</i>	List (see above)
<i>Input Restrictions</i>	The water heater type shall agree with equipment specified in the construction documents.
<i>Baseline Rules</i>	Water heaters in the baseline system shall be the same as those in the proposed design, except when the proposed design has a heat pump water heater, in which case the baseline building system shall have an electric storage water heater.

## Rated Capacity

<i>Applicability</i>	All water heaters
<i>Definition</i>	The heating capacity of a water heater at the rated conditions specified in Table 7.8 of ASHRAE Standard 90.1-2007 or



<i>Definition</i>	A unique descriptor for each water heating recirculation system
<i>Units</i>	Text, unique
<i>Input Restrictions</i>	Where applicable, this should match the tags or descriptions that are used on the plans such that a plan reviewer can make a connection.
<i>Baseline Rules</i>	The naming convention for the baseline building system shall be similar to the proposed design.

## Pumping Power

<i>Applicability</i>	All recirculation systems
<i>Definition</i>	The electric demand of the pumps when the recirculation system is operating. This input is a function of the flow rate, the pumping head, the motor efficiency, and the pump efficiency. Some software may allow each of these factors to be separately entered.
<i>Units</i>	Watts (W)
<i>Input Restrictions</i>	Pumping power shall be consistent with the piping configuration, flow rate, and equipment specified on the construction documents.
<i>Baseline Rules</i>	Pumping power in the baseline building shall be the same as the proposed design unless specific measures are included in the proposed design to reduce the pumping power. Example measures could include reducing pumping head by oversizing distribution piping or specifying premium efficiency motors or pumps.

## Schedule

<i>Applicability</i>	All recirculation systems
<i>Definition</i>	An on/off or fraction schedule that indicates when the recirculation system is expected to be operated
<i>Units</i>	Data structure: schedule, on/off or fraction
<i>Input Restrictions</i>	The schedule for operation of the recirculation system shall be consistent with the design intent of the system. Hotels, hospitals, and other 24x7 institutional buildings will typically have a system that runs continuously. The schedule should be consistent with the controls called for on the construction documents: no control (runs constantly), timer control, temperature control, timer/temperature control, or demand control.
<i>Baseline Rules</i>	Recirculation schedules for the baseline building shall be the same as the proposed design.

## Piping

<i>Applicability</i>	All recirculation systems
<i>Definition</i>	The heat loss rate of piping for recirculating systems. This may be defined separately for pipe that is exposed to outdoor conditions, indoor or semi-heated conditions, or buried underground conditions. These losses may be modeled as additional loads on the water heater(s).
<i>Units</i>	Btu/h-°F specified separately for outdoor, indoor, or buried locations
<i>Input Restrictions</i>	All piping in the recirculation system should be included. Heat loss for each of the three conditions should be consistent with piping runs, sizes, and insulation as shown on the construction documents.
<i>Baseline Rules</i>	The length and size of piping in the baseline building shall be the same as the proposed design. Insulation in the baseline building shall be as prescribed in Table 6.8.3 for ASHRAE Standard 90.1-2007 and Table 6.2.4.1.3 of ASHRAE Standard 90.1-2001.

# Water Heating Auxiliaries

## External Storage Tanks

<i>Applicability</i>	All water heating systems that have an external storage tank
<i>Definition</i>	Some water heating systems have a storage tank that is separate from the water heater(s) that provides additional storage capacity. This building descriptor addresses the heat loss related to the external tank, which is an additional load that must be satisfied by the water heater(s). The heat loss shall account for the surface area and U-factor tank, as well as the average temperature conditions where the tank is located. Some software may allow these factors to be separately specified.
<i>Units</i>	Btu/h for the entire tank
<i>Input Restrictions</i>	As specified in manufacturer data and documented on the construction documents
<i>Baseline Rules</i>	Heat loss associated with the storage tank in the baseline building shall meet the requirements for an unfired storage tank in the baseline standards which is an insulation R-value of 12.5. The surface area and location of the storage tank shall be the same as the proposed design.

## Heat Recovery

<i>Applicability</i>	Water heating systems that are coupled to heat recovery equipment
<i>Definition</i>	Building equipment such as air conditioners, chillers, gas fired generators, etc. produce thermal energy that may be recovered and used to heat water. The heat producing characteristics are generally defined for the equipment that is producing the heat, not the equipment that is receiving the heat (water heaters in this case). The building descriptors will vary depending on the equipment. The models for heat producing equipment need to produce output on an hourly basis so that the schedule of heat production and heating needs can be aligned and evaluated in the water heating model.
<i>Units</i>	Data structure: depends on the equipment producing the heat
<i>Input Restrictions</i>	There are no restrictions, other than agreement with the construction documents.
<i>Baseline Rules</i>	The baseline building has heat recovery when the baseline standard is ASHRAE Standard 90.1-2007 and the conditions of Section 6.5.6.2 of that standard are satisfied. The baseline building is modeled with heat recovery when all of the following conditions are true:

The building operates 24 hours per day.

The building has water cooled chillers with a heat rejection capacity greater than 6 million Btu/h. This equates to about 400 tons of electric chiller capacity.

The water heating peak use is greater than 1,000,000 Btu/h.

See the User's Manual for ASHRAE Standard 90.1-2007, page 6-82 for details on the requirements for the heat recovery system and exceptions to the requirement.

## Solar Thermal

<i>Applicability</i>	Water heating systems with a solar thermal system
<i>Definition</i>	<p>A solar thermal water heating system consists of one or more collectors. Water is passed through these collectors and is heated under the right conditions. There are two general types of solar water heaters: integrated collector storage (ICS) systems and active systems. Active systems include pumps to circulate the water, storage tanks, piping, and controls. ICS systems generally have no pumps and piping is minimal.</p> <p>Solar systems may be tested and rated as a complete system or the collectors may be separately tested and rated. SRCC OG-300 is the test procedure for whole systems and SRCC OG-100 is the test procedure for collectors. The building descriptors used to define the solar thermal system may vary with each software application and with the details of system design.</p> <p>Heat produced by solar thermal systems will generally not align perfectly with the need for heating, so the model needs to account for the temporal mismatch in some manner.</p>
<i>Units</i>	Data structure: will vary with the software and system details
<i>Input Restrictions</i>	There are no restrictions, other than agreement with the construction documents.
<i>Baseline Rules</i>	The baseline building has no solar auxiliary system.

## Combined Space Heating and Water Heating

<i>Applicability</i>	Projects that use a boiler to provide both space heat and water heating
<i>Definition</i>	<p>A system that provides both space heating and water heating from the same equipment, generally the space heating boiler. Such systems are restricted by the baseline standards, but may be modeled in the candidate building. The restrictions are due to the misalignment of the space heating load and the water heating load. The first is highly intermittent and weather dependent, while the latter is more constant and not generally related to the weather.</p>
<i>Units</i>	Data structure
<i>Input Restrictions</i>	The proposed design may have a combined space and water heating system.
<i>Baseline Rules</i>	The baseline building shall be modeled with separate space heating and water heating systems, meeting the prescriptive requirements for each. The water heating system shall use the same fuel as the combined boiler.

## 6.9.2 Exterior Lighting

All exterior lighting applications shall be included in the model when the purpose is for green building ratings or Design to Earn ENERGY STAR. Exterior lighting is an optional input for the purpose of tax deductions. If an exterior lighting application is not connected to the building electricity meter, then it should not be included, e.g. street lighting or common area lighting.

The building descriptors that are described in this section apply separately to each lighting application; input for each building descriptor is provided for parking lot lighting, façade lighting, entry lighting, etc. Each lighting application is modeled as a separate system. Exterior lighting applications affect the electric load of the building but do not produce heat that would need to be removed by the building's cooling system.

With ASHRAE Standard 90.1-2007, exterior lighting applications are grouped as tradable or non-tradable. Non-tradable lighting applications are use-it-or-lose-it categories such that the allowed power is the lesser of the power used for the proposed design or the allowed power.

- Tradable applications include uncovered parking areas, building grounds, building entrances and exits, canopies and overhangs, and outdoor sales areas. Thus, the allowed lighting power density of these applications is multiplied by the associated area or length to yield the baseline power.
- Non-tradable applications can only be used for the specific application and cannot be traded between applications or with other non-tradable applications such as building façades, automated teller machines, guardhouses, loading for law enforcement, drive through windows, or parking near retail. The allotment is in a use-it-or-lose-it format. Thus, the baseline power for these applications is the lesser of the wattage input for these applications or the product of the lighting power density for these applications and the area/length of these applications.

## Exterior Lighting Name

<i>Applicability</i>	All exterior lighting systems
<i>Definition</i>	A name for the lighting system
<i>Units</i>	Text, unique
<i>Input Restrictions</i>	The name should be descriptive and provide a link to the construction documents.

<i>Baseline Rules</i>	The baseline building should have a corresponding exterior lighting system that maps to the one in the proposed design. The name should be similar.
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## Exterior Lighting Category

<i>Applicability</i>	All exterior lighting systems
<i>Definition</i>	<p>A classification of each exterior lighting system from Table 9.4.5 in ASHRAE Standard 90.1-2007 or Table 9.3.2 in ASHRAE Standard 90.1-2001. This classification will determine the lighting power for the baseline building (see below). The lighting category establishes if the exterior lighting application is tradable or non-tradable under ASHRAE Standard 90.1-2007. Credit is offered for power reductions for tradable lighting applications, but not for non-tradable lighting applications.</p> <p>The baseline standard and the associated User's Manual should be consulted for how to classify exterior lighting applications, however main entries shall provide access to the general public and shall not be used exclusively for staff or service personnel."<sup>1</sup> A couple of other clarifications are as follows:</p> <p>Bikeways – treated as walkways</p> <p>Outdoor dining – treated as plaza areas</p> <p>One of the categories offered by the software should be “Lighting that is specifically designated as required by a health or life safety statute, ordinance, or regulation.” This lighting is specifically excluded by the baseline standards such that the baseline building lighting power is the same as the proposed design.</p>
<i>Units</i>	List (from Table 9.4.5 of ASHRAE Standard 90.1-2007) (from Table 9.3.2 of ASHRAE Standard 90.1-2001)
<i>Input Restrictions</i>	The classification should accurately match the exterior lighting application in the rated building.
<i>Baseline Rules</i>	Same as the proposed design

## Exterior Lighting Area or Length

<i>Applicability</i>	All exterior lighting systems
<i>Definition</i>	<p>Each exterior lighting system application (see above) has an area or length associated with it. This area or length is a factor in determining the baseline building lighting power (see below). The following rules should be taken into account when calculating length or area:</p> <ul style="list-style-type: none"> <li>• Façade Illuminated area. Only areas of façade that are illuminated without obstruction are included in the illuminated area.</li> <li>• If the lighted façade area exceeds exterior wall area or if door linear footage exceeds 25% of building perimeter, the software shall produce a warning.</li> <li>• Uncovered parking shall be calculated according to the rules for the parking portion of “Illuminated hardscape” from Title 24-2005. This definition accounts for the paved area that is within 3 times the luminaire mounting height of parking luminaires: “Illuminated area is defined as any area within a square pattern around each luminaire or pole that is six times the mounting height with the luminaire in the middle of the pattern less any area that is within a building, under a canopy, beyond property lines or obstructed by a sign or structure.”<sup>2</sup></li> </ul>
<i>Units</i>	ft <sup>2</sup> or ft
<i>Input Restrictions</i>	The area of the exterior lighting application should be determined using the rules in the baseline standard and the associated User's Manual.
<i>Baseline Rules</i>	Same as the proposed design

## Exterior Lighting Power

<i>Applicability</i>	All exterior lighting systems
<i>Definition</i>	The power used for the exterior lighting application. This power should include the lamp as well as the ballast.
<i>Units</i>	W or W/ft <sup>2</sup>
<i>Input Restrictions</i>	The lighting power should match the construction documents or the existing building being rated.
<i>Baseline Rules</i>	<p>The exterior lighting power for the baseline building is determined from the product of the <i>exterior lighting area or length</i> and the allowed power for the exterior <i>lighting category</i>. The allowed power is determined from Table 9.4.5 in ASHRAE Standard 90.1-2007 or Table 9.3.2 in ASHRAE Standard 90.1-2001.</p> <p>For non-tradable exterior lighting applications, the baseline building lighting power is the lesser of the lighting power for the proposed design application or the allowed power determined above.</p>

## Exterior Lighting Control

<i>Applicability</i>	All exterior lighting systems
<i>Definition</i>	<p>The means of controlling exterior lighting systems. The baseline standards required both daylight control and scheduling (e.g. a photocell and a standard time clock or an astronomical time clock). Additional controls could include:</p> <ul style="list-style-type: none"> <li>• Standard (as required by baseline standards)</li> </ul>

- Bi-level motion sensing controls<sup>2</sup>
- On/off motion sensing control
- Bi-level scheduling controls<sup>4</sup>

<i>Units</i>	List (see above) along with an associated power adjustment factor (PAF) or schedule adjustment
<i>Input Restrictions</i>	As designed. Documentation should be provided for lighting controls other than standard and evidence should be provided to support the reduction in lighting power (PAF) or the modification to the schedule.
<i>Baseline Rules</i>	The baseline building shall have standard lighting controls, e.g. a photocell and standard time clock. No adjustment is made to either the baseline building exterior lighting power or the schedule

### Exterior Lighting Schedule

<i>Applicability</i>	All exterior lighting systems
<i>Definition</i>	The exterior lighting schedule describes the fraction of installed connected lighting power that is operating for any given hour. The lighting schedule is a matrix of fractional values for each hour of the day and by day of week.
<i>Units</i>	Data structure: schedule, fractional.
<i>Input Restrictions</i>	<p>The default exterior lighting schedule shall be from dusk until 1 hour after the indoor lighting schedule drops below emergency lighting level (i.e. below 15%). Custom schedules may be created for atypical operating hours for exterior lighting systems. Each lighting system may operate on its own schedule. The default schedule shall be used when detailed information is unavailable.</p> <p>The schedule may be modified when qualifying lighting controls are installed (see above).</p>
<i>Baseline Rules</i>	The schedule for the baseline building shall be the same as the proposed design unless the proposed design schedule is adjusted for qualifying lighting controls, in which case the unadjusted schedule is used for the baseline building.

1. From CA T-24-2008 Table 147B
2. 2005 T-24 T-24-2005 §147(c)1A
3. A PG&E study of bi-level motion sensing lighting controls for an outdoor parking lot found that the lights operated at low output for 45% of the evening hours. Pacific Gas and Electric Company Bi-Level LED Parking Lot Lighting: Raley's Supermarket West Sacramento, CA: February 2009 Emerging Technologies Program Application Assessment Report #0815 <http://www.etcc-ca.com/images/stories/final20emerging20technology20repor...> [1]
4. For bi-level scheduling controls, one could turn off a fraction of the lights after interior lighting schedule dropped below 50% to indicate reduced lighting for after normal business hours or if parking lot lighting is within scope, reduced parking area that is illuminated during stocking, and other reduced activity periods.

## 6.9.3 Swimming Pools

### Configuration and Design Requirements

Pool Name	
<i>Applicability</i>	All pools
<i>Definition</i>	A unique identifier that keys the pool to the construction documents
<i>Units</i>	Text, unique
<i>Input Restrictions</i>	None
<i>Baseline Rules</i>	The name for the baseline building pool should be similar to the proposed design.
Volume	
<i>Applicability</i>	All pools
<i>Definition</i>	The volume of the pool
<i>Units</i>	Cubic feet (ft <sup>3</sup> )
<i>Input Restrictions</i>	None
<i>Baseline Rules</i>	Same as the proposed design
Surface Area	
<i>Applicability</i>	All pools
<i>Definition</i>	The surface area of the pool affects heat loss and evaporation.
<i>Units</i>	Square feet (ft <sup>2</sup> )
<i>Input Restrictions</i>	None
<i>Baseline Rules</i>	Same as the proposed design
Cover	
<i>Applicability</i>	All pools
<i>Definition</i>	An indication

<i>Definition</i>	An indication
<i>Units</i>	Boolean (Yes/No)
<i>Input Restrictions</i>	None
<i>Baseline Rules</i>	The baseline building shall have a pool cover per Section 7.4.5.2 of ASHRAE Standard 90.1-2007.

Cover Schedule	
<i>Applicability</i>	All pools
<i>Definition</i>	A schedule indicating when the pool cover is in place
<i>Units</i>	Data structure: schedule, on/off or fractional
<i>Input Restrictions</i>	None
<i>Baseline Rules</i>	Same as the proposed design

Filtration Rate	
<i>Applicability</i>	All pools
<i>Definition</i>	The rate at which the pool water is passed through the filtering system when the filtration system is operating
<i>Units</i>	Hours per pool change
<i>Input Restrictions</i>	None
<i>Baseline Rules</i>	Same as the proposed design

Filtration Schedule	
<i>Applicability</i>	All pools
<i>Definition</i>	A schedule indicating when the pool filtration system is in operation
<i>Units</i>	Data structure: schedule, on/off or fractional
<i>Input Restrictions</i>	None
<i>Baseline Rules</i>	Same as the proposed design

Temperature	
<i>Applicability</i>	All pools
<i>Definition</i>	The temperature at which the pool is maintained
<i>Units</i>	Degrees Fahrenheit (°F)
<i>Input Restrictions</i>	None
<i>Baseline Rules</i>	Same as the proposed design

Temperature Schedule	
<i>Applicability</i>	All pools
<i>Definition</i>	A schedule indicating variation in the pool temperature, either seasonally or monthly
<i>Units</i>	Data structure: schedule, temperature
<i>Input Restrictions</i>	None
<i>Baseline Rules</i>	Same as the proposed design

Pumping and Filtration	
Pumping Power	
<i>Applicability</i>	All pools
<i>Definition</i>	The power used by the pumping system. This is a function of the pumping head (which depends on pipe lengths, sizes, and filtration type), the pump efficiency, the motor efficiency, and the flow rate. Some software may allow these to be entered as separate building descriptors. This value should be consistent with the filtration rate noted above.
<i>Units</i>	Watts (W)
<i>Input Restrictions</i>	None
<i>Baseline Rules</i>	Same as the proposed design unless the proposed design uses special low head filters and premium efficiency motors

Heating Equipment	
Heater Type	
<i>Applicability</i>	All pools
<i>Definition</i>	The type of equipment that is used to maintain the pool temperature
<i>Units</i>	List: solar, heat pump, gas, oil, or electric resistance



<i>Units</i>	List: solar, heat pump, gas, oil, or electric resistance
<i>Input Restrictions</i>	None
<i>Baseline Rules</i>	If there is gas or oil on the site, the baseline building shall be modeled with a natural gas or oil pool heater meeting the requirements of Table 7.8 for ASHRAE Standard 90.1-2007. If there is no gas or oil on the site, the baseline building shall be modeled with a heat pump pool heater meeting the requirements of Table 7.8 for ASHRAE Standard 90.1-2007.

### Heater Efficiency

<i>Applicability</i>	All pools with heaters
<i>Definition</i>	The thermal efficiency of the pool heater
<i>Units</i>	Unitless, thermal efficiency
<i>Input Restrictions</i>	None
<i>Baseline Rules</i>	See the baseline building rules for heater type

### Solar System Features

<i>Applicability</i>	All pools with solar pool heaters
<i>Definition</i>	The collector area, size, efficiency, and pumping characteristics of the solar pool system
<i>Units</i>	Data structure
<i>Input Restrictions</i>	None
<i>Baseline Rules</i>	Not applicable. The baseline building has a pool cover, not solar

## 6.9.4 Other Electricity Use

This set of building descriptors should be used to include any miscellaneous electricity use that would add to the electric load of the building and would be on the building meter. These energy uses are assumed to be outside the building envelope and do not contribute heat gain to any thermal block.

### Miscellaneous Electric Power

<i>Applicability</i>	All buildings with miscellaneous electric equipment located on the building site
<i>Definition</i>	The power for miscellaneous equipment.
<i>Units</i>	Watts (W)
<i>Input Restrictions</i>	As designed. All miscellaneous power shall be accounted for when the purpose is a green building rating or an energy label.
<i>Baseline Rules</i>	Same as the proposed design

### Miscellaneous Electric Schedule

<i>Applicability</i>	All buildings with miscellaneous electric equipment located on the building site
<i>Definition</i>	The schedule of operation for miscellaneous electric equipment. This is used to convert electric power to energy use.
<i>Units</i>	Data structure: schedule, fractional
<i>Input Restrictions</i>	The schedule specified for the building should match the operation patterns of the system.
<i>Baseline Rules</i>	Same as the proposed design

## 6.9.5 Other Gas Use

This set of building descriptors should be used to include any miscellaneous gas use that would add to the load of the building and would be on the building meter. These energy uses are assumed to be outside the building envelope and do not contribute heat gain to any thermal block.

### Other Gas Power

<i>Applicability</i>	All buildings that have commercial gas equipment
<i>Definition</i>	Gas power is the peak power which is modified by the schedule (see below).
<i>Units</i>	Btu/h-ft <sup>2</sup>
<i>Input Restrictions</i>	As designed
<i>Baseline Rules</i>	Same as the proposed design

### Other Gas Schedule

<i>Applicability</i>	All buildings that have commercial gas equipment
<i>Definition</i>	The schedule of operation for commercial gas equipment. This is used to convert gas power to energy use.
<i>Units</i>	Data structure: schedule, fractional
<i>Input Restrictions</i>	Continuous operation is prescribed.
<i>Baseline Rules</i>	Same as the proposed design

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**Source URL:** <http://www.comnet.org/mgp/content/69-miscellaneous-energy-uses>

**Links:**

[1] <http://www.etcc-ca.com/images/stories/final20emerging20technology20report20for20led20parking20lot20lighting1.pdf>