

Building Energy Performance Characteristics
 For Compliance with Chapter 11 of Standard 90.1-2007

Project:

Project Location:

See the instructions and disclaimer for this spreadsheet.

	Element	ASHRAE/IESNA Standard 90.1-2007 with 2008 Supplement Requirement	Values In Simulation for Proposed Building Design	Values Incorporated Into This Design
Energy Cost Budget	For Budget Building Design			
	For Proposed Building Design			
Section 5				
Building Envelope (Climate Zone 5A)				
Prescriptive Building Envelope Option				
Space-Conditioning Category (Nonresidential, Residential, Semiheated)				
Gross Roof Area				
Roofs: Minimum Solar Reflectance				
Roofs: Minimum Solar Reflective Index				
Roofs: Assembly Maximum U-factor	Insulation Entirely above Deck			
	Metal Building			
	Attic and Other			
Roofs: Minimum Insulation R-Value	Insulation Entirely above Deck			
	Metal Building			
	Attic and Other			
Walls, Above-Grade: Assembly Maximum U-factor	Mass			
	Metal Building			
	Steel-Framed			
	Wood-Framed and Other			
Walls, Above-Grade: Minimum Insulation R-Value	Mass			
	Metal Building			
	Steel-Framed			
	Wood-Framed and Other			
Walls, Below-Grade: Assembly Maximum C-factor				
Walls, Below-Grade: Minimum Insulation R-Value				
Floors: Assembly Maximum U-factor	Mass			
	Steel-Joist			
	Wood-Framed and Other			
Floors: Minimum Insulation R-Value	Mass			
	Steel-Joist			
	Wood-Framed and Other			
Slab-On-Grade Floors: Assembly Maximum F-factor	Unheated			
	Heated			
Slab-On-Grade Floors: Minimum Insulation R-Value	Unheated			
	Heated			
Opaque Doors: Assembly Maximum U-factor	Swinging			
	Nonswinging			
Gross Wall Area				
Total Vertical Fenestration Area				
Vertical Glazing: Percent of Wall Area				
Vertical Glazing: Assembly Maximum U-factor	Nonmetal framing (all)			
	Metal framing (curtainwall / storefront)			

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	Metal framing (entrance door)			
	Metal framing (all other)			
Vertical Glazing: Assembly Maximum SHGC				
Visible Light Transmittance (VLT)				
Total Skylight Area				
Skylight: Percent of Roof Area				
Skylight, Glass with Curb: Assembly Maximum U-factor	0% - 2.0%			
	2.1% - 5.0%			
Skylight, Plastic with Curb: Assembly Maximum U-factor	0% - 2.0%			
	0% - 2.0%			
Skylight, without Curb: Assembly Maximum U-factor	0% - 2.0%			
	0% - 2.0%			
Skylight, Glass with Curb: Assembly Maximum SHGC	2.1% - 5.0%			
	2.1% - 5.0%			
Skylight, Plastic with Curb: Assembly Maximum SHGC	2.1% - 5.0%			
	2.1% - 5.0%			
Skylight, without Curb: Assembly Maximum SHGC	2.1% - 5.0%			
	2.1% - 5.0%			
Building Envelope Sealing: Joints Around Fenestration & Doors				
Building Envelope Sealing: Junctions Between Walls & Foundation				
Building Envelope Sealing: Junctions Between Walls at Corners				
Building Envelope Sealing: Junctions Between Walls and Structural Floors or Roofs				
Building Envelope Sealing: Between Walls and Roof or Wall Panels				
Building Envelope Sealing: Utility Service Penetrations				
Building Envelope Sealing: Site-built Fenestration and Doors				
Building Envelope Sealing: Assemblies Used as Plenums or Ducts				
Building Envelope Sealing: Joints, seams and Penetrations of Vapor Retarders				
Building Envelope Sealing: At All Other Openings				
Fenestration: Maximum Air Leakage Requirement				
Door: Maximum Air Leakage Requirement				
Loading Dock Weatherseal Requirement				
Vestibule Requirement				
Eave Vent Baffle Requirement				
Insulation Protection Requirement				
Section 6				
Heating, Ventilating and Air Conditioning				
Outdoor Air Quantity Supplied				
Calculated Load	Heating			
	Cooling			
Equipment Capacity	Heating			
	Cooling			
HVAC System Economizer Cycle Requirement	Air Side Capacity			
	Water Side Capacity			
	Controls			
Unitary Air Conditioners, Electrically Operated, Minimum Efficiencies	Air Cooled, Split System <65,000 Btu/h			

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	Air Cooled, Single Package <65,000 Btu/h			
	Air Cooled, Split System, Through- the-Wall ≤30,000 Btu/h			
	Air Cooled, Single Package, Through- the-Wall ≤30,000 Btu/h			
	Air Cooled ≥65,000 Btu/h and <135,000 Btu/h			
	Air Cooled ≥135,000 Btu/h and <240,000 Btu/h			
	Air Cooled ≥240,000 Btu/h and <760,000 Btu/h			
	Air Cooled ≥760,000 Btu/h			
	Water and Evaporatively Cooled <65,000 Btu/h			
	Water and Evaporatively Cooled ≥65,000 Btu/h and <135,000 Btu/h			
	Water and Evaporatively Cooled ≥135,000 Btu/h and <240,000 Btu/h			
	Water and Evaporatively Cooled ≥240,000 Btu/h			
	Condensing Units, Electrically Operated, Minimum Efficiencies	Air Cooled ≥135,000 Btu/h		
Water or Evaporatively Cooled ≥135,000 Btu/h				
Unitary and Applied Heat Pumps, Electrically Operated, Cooling Mode Minimum Efficiencies	System <65,000 Btu/h			
	Package <65,000 Btu/h			

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	Element	ASHRAE/IESNA Standard 90.1-2007 with 2008 Supplement Requirement	Values In Simulation for Proposed Building Design	Values Incorporated Into This Design
	Air Cooled, Split System, Through-the-Wall $\leq 30,000$ Btu/h			
	Air Cooled, Single Package, Through-the-Wall $\leq 30,000$ Btu/h			
	Air Cooled $\geq 65,000$ Btu/h and $< 135,000$ Btu/h			
	Air Cooled $\geq 135,000$ Btu/h and $< 240,000$ Btu/h			
	Air Cooled $\geq 240,000$ Btu/h			
	Water Source $< 17,000$ Btu/h			
	Water Source $\geq 17,000$ Btu/h and $< 65,000$ Btu/h			
	Water Source $\geq 65,000$ Btu/h and $< 135,000$ Btu/h			
	Groundwater Source $< 135,000$ Btu/h			
	Ground Source $< 135,000$ Btu/h			
Unitary and Applied Heat Pumps, Electrically Operated, Heating Mode Minimum Efficiencies	Air Cooled, Split System (Cooling Capacity) $< 65,000$ Btu/h			
	Air Cooled, Single Package (Cooling Capacity) $< 65,000$ Btu/h			
	Air Cooled, Split System, Through-the-Wall (Cooling Capacity) $\leq 30,000$ Btu/h			
	Air Cooled, Single Package, Through-the-Wall (Cooling Capacity) $\leq 30,000$ Btu/h			
	Air Cooled (Cooling Capacity) $\geq 65,000$ Btu/h and $< 135,000$ Btu/h			
	Air Cooled (Cooling Capacity) $\geq 135,000$ Btu/h			

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	Element	ASHRAE/IESNA Standard 90.1-2007 with 2008 Supplement Requirement	Values In Simulation for Proposed Building Design	Values Incorporated Into This Design
	Water Source (Cooling Capacity) <135,000 Btu/h			
	Groundwater Source (Cooling Capacity) <135,000 Btu/h			
	Ground Source (Cooling Capacity) <135,000 Btu/h			
Water Chilling Package, Air Cooled, Electrically Operated, Minimum Efficiencies - Compliance Path A	<150 tons			
	≥150 tons			
Water Chilling Package, Water Cooled, Electrically Operated, Positive Displacement, Maximum Efficiencies - Compliance Path (A or B)	<75 tons			
	≥75 tons & <150 tons			
	≥150 tons & <300 tons			
	≥300 tons			
Water Chilling Package, Water Cooled, Electrically Operated, Centrifugal, Maximum Efficiencies - Compliance Path (A or B)	<150 tons			
	≥150 tons & <300 tons			
	≥300 tons & <600 tons			
	≥600 tons			
Water Chilling Package, Air Cooled Absorption, Single Effect, Minimum Efficiency - Compliance Path A	All Capacities			
Water Chilling Package, Water Cooled Absorption, Single Effect, Minimum Efficiency - Compliance Path A	All Capacities			
Water Chilling Package, Absorption, Double Effect, Indirect-Fired, Minimum Efficiency - Compliance Path A	All Capacities			
Water Chilling Package, Absorption, Double Effect, Direct-Fired, Minimum Efficiency - Compliance Path A	All Capacities			
Package Terminal Air Conditioners (Cooling Mode) Minimum Efficiencies	Standard Size			
	Nonstandard Size			
Package Terminal Heat Pumps (Cooling Mode) Minimum Efficiencies	Standard Size			
	Nonstandard Size			
Package Terminal Heat Pumps (Heating Mode) Minimum Efficiencies	Standard Size			
	Nonstandard Size			
Single-Package Vertical Air Conditioners (Cooling Mode) Minimum Efficiencies	<65,000 Btu/h			
	≥65,000 Btu/h and <135,000 Btu/h			
	≥135,000 Btu/h and <240,000 Btu/h			
Single-Package Vertical Heat Pumps (Cooling Mode) Minimum Efficiencies	<65,000 Btu/h			
	≥65,000 Btu/h and <135,000 Btu/h			
	≥135,000 Btu/h and <240,000 Btu/h			
Single-Package Vertical Heat Pumps (Heating Mode) Minimum Efficiencies	<65,000 Btu/h			
	≥65,000 Btu/h and <135,000 Btu/h			

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	≥135,000 Btu/h and <240,000 Btu/h			
Room Air Conditioners, with Louvered Sides, Minimum Efficiencies	<6,000 Btu/h			
	≥6,000 Btu/h and <8,000 Btu/h			
	≥8,000 Btu/h and <14,000 Btu/h			
	≥14,000 Btu/h and <20,000 Btu/h			
	≥20,000 Btu/h			
Room Air Conditioners, without Louvered Sides, Minimum Efficiencies	<8,000 Btu/h			
	≥8,000 Btu/h and <20,000 Btu/h			
	≥20,000 Btu/h			
Room Air-conditioner Heat Pumps, with Louvered Sides, Minimum Efficiencies	<20,000 Btu/h			
	≥20,000 Btu/h			
Room Air-conditioner Heat Pumps, without Louvered Sides, Minimum Efficiencies	<14,000 Btu/h			
	≥14,000 Btu/h			
Room Air Conditioners, Casement Only, Minimum Efficiency	All Capacities			
Room Air Conditioners, Casement-slider, Minimum Efficiency	All Capacities			
Warm Air Furnaces and Combination Warm Air Furnaces/Air-conditioning Units Minimum Efficiencies	Gas-fired <225,000 Btu/h			
	Gas-fired ≥225,000 Btu/h			
	Oil-fired <225,000 Btu/h			
	Oil-fired ≥225,000 Btu/h			
Warm Air Duct Furnaces Minimum Efficiency	Gas-fired			
Warm Air Unit Heaters Minimum Efficiencies	Gas-fired			
	Oil-fired			
Boilers, Hot Water, Minimum Efficiencies	Gas-fired <300,000 Btu/h			
	Gas-fired ≥300,000 Btu/h and ≤2,500,000 Btu/h			
	Gas-fired >2,500,000 Btu/h			
	Oil-fired <300,000 Btu/h			
	Oil-fired ≥300,000 Btu/h and ≤2,500,000 Btu/h			
	Oil-fired >2,500,000 Btu/h			
Boilers, Steam, Minimum Efficiencies	Gas-fired <300,000 Btu/h			
	Gas-fired, Except Natural Draft, ≥300,000 Btu/h and ≤2,500,000 Btu/h			

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	Gas-fired, Except Natural Draft, >2,500,000 Btu/h			
	Gas-fired, Natural Draft $\geq 300,000$ Btu/h and $\leq 2,500,000$ Btu/h			
	Gas-fired, Natural Draft >2,500,000 Btu/h			
	Oil-fired <300,000 Btu/h			
	Oil-fired $\geq 300,000$ Btu/h and $\leq 2,500,000$ Btu/h			
	Oil-fired >2,500,000 Btu/h			
	Heat Rejection Equipment Minimum Performance	Propeller or Axial Fan Open-Circuit Cooling Towers		
Centrifugal Fan Open-Circuit Cooling Towers $\leq 1,100$ gpm				
Centrifugal Fan Open-Circuit Cooling Towers >1,100 gpm				
Propeller or Axial Fan Closed-Circuit Cooling Towers				
Centrifugal Fan Closed-Circuit Cooling Towers				
Air-Cooled Condensers				
Zone Thermostatic Control		One per Zone		
	Dead Band			
	Automatic Off- Hour Shutdown			
	Automatic Off- Hour Setback			
	Optimum Start			
	Automatic Zone Isolation			
Ventilation System Controls	Stair and Shaft Vent Motorized Damper Operation			
	Ventilation Damper Operation			
	Automatic Off- Hour Damper Shutoff			

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	Element	ASHRAE/IESNA Standard 90.1-2007 with 2008 Supplement Requirement	Values In Simulation for Proposed Building Design	Values Incorporated Into This Design
	Motorized Damper Maximum Leakage Rate			
	Nonmotorized Damper Maximum Leakage Rate			
	Ventilation Fan Automatic Shutoff			
	Demand Control Ventilation			
Heat Pump Auxiliary Heat Control				
Humidifier Preheat Control				
Simultaneous Heating and Cooling Prevention				
Simultaneous Humidification and Dehumidification Prevention				
Freeze Protection and Snow/Ice Melting Systems Control				
Duct Insulation For Supply Duct Location, Minimum R-Values	Exterior (Heating Only)			
	Ventilated Attic (Heating Only)			
	Buried (Heating Only)			
	Exterior (Cooling Only)			
	Ventilated Attic (Cooling Only)			
	Unvented Attic above Insulated Ceiling (Cooling Only)			
	Unvented Attic with Roof Insulation (Cooling Only)			
	Unconditioned Space (Cooling Only)			
	Exterior (Heating and Cooling)			
	Ventilated Attic (Heating and Cooling)			
	Unvented Attic above Insulated Ceiling (Heating and Cooling)			
	Unvented Attic with Roof Insulation (Heating and Cooling)			
	Unconditioned Space (Heating and Cooling)			
	Buried (Heating and Cooling)			
Duct Insulation For Return Duct Location, Minimum R-Values	Exterior			

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	Element	ASHRAE/IESNA Standard 90.1-2007 with 2008 Supplement Requirement	Values In Simulation for Proposed Building Design	Values Incorporated Into This Design
	Ventilated Attic			
	Unventilated Attic above Insulated Ceiling			
Pipe Insulation for Heating Systems, Conductivity / Minimum Thickness	Nominal Size <1"; Operating Temperature >350°			
	Nominal Size 1" to <1.5"; Operating Temperature >350°			
	Nominal Size 1.5" to <4"; Operating Temperature >350°			
	Nominal Size 4" to <8"; Operating Temperature >350°			
	Nominal Size >8"; Operating Temperature >350°			
	Nominal Size <1"; Operating Temperature 251° to 350°			
	Nominal Size 1" to <1.5"; Operating Temperature 251° to 350°			
	Nominal Size 1.5" to <4"; Operating Temperature 251° to 350°			
	Nominal Size 4" to <8"; Operating Temperature 251° to 350°			
	Nominal Size >8"; Operating Temperature 251° to 350°			
	Nominal Size <1"; Operating Temperature 201° to 250°			
	Nominal Size 1" to <1.5"; Operating Temperature 201° to 250°			

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	Nominal Size 1.5" to <4"; Operating Temperature 201° to 250°			
	Nominal Size 4" to <8"; Operating Temperature 201° to 250°			
	Nominal Size >8"; Operating Temperature 201° to 250°			
	Nominal Size <1"; Operating Temperature 141° to 200°			
	Nominal Size 1" to <1.5"; Operating Temperature 141° to 200°			
	Nominal Size 1.5" to <4"; Operating Temperature 141° to 200°			
	Nominal Size 4" to <8"; Operating Temperature 141° to 200°			
	Nominal Size >8"; Operating Temperature 141° to 200°			
	Nominal Size <1"; Operating Temperature 105° to 140°			
	Nominal Size 1" to <1.5"; Operating Temperature 105° to 140°			
	Nominal Size 1.5" to <4"; Operating Temperature 105° to 140°			
	Nominal Size 4" to <8"; Operating Temperature 105° to 140°			
	Nominal Size >8"; Operating Temperature 105° to 140°			

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	Element	ASHRAE/IESNA Standard 90.1-2007 with 2008 Supplement Requirement	Values In Simulation for Proposed Building Design	Values Incorporated Into This Design
Pipe Insulation for Domestic and Service Hot-Water Systems, Conductivity / Minimum Thickness	Nominal Size <1"; Operating Temperature 105°+			
	Nominal Size 1" to <1.5"; Operating Temperature 105°+			
	Nominal Size 1.5" to <4"; Operating Temperature 105°+			
	Nominal Size 4" to <8"; Operating Temperature 105°+			
	Nominal Size >8"; Operating Temperature 105°+			
Pipe Insulation for Cooling Systems, Conductivity / Minimum Thickness	Nominal Size <1"; Operating Temperature 40° to 60°			
	Nominal Size 1" to <1.5"; Operating Temperature 40° to 60°			
	Nominal Size 1.5" to <4"; Operating Temperature 40° to 60°			
	Nominal Size 4" to <8"; Operating Temperature 40° to 60°			
	Nominal Size >8"; Operating Temperature 40° to 60°			
	Nominal Size <1"; Operating Temperature <40°			
	Nominal Size 1" to <1.5"; Operating Temperature <40°			
	Nominal Size 1.5" to <4"; Operating Temperature <40°			
	Nominal Size 4" to <8"; Operating Temperature <40°			
	Nominal Size >8"; Operating Temperature <40°			

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	Element	ASHRAE/IESNA Standard 90.1-2007 with 2008 Supplement Requirement	Values In Simulation for Proposed Building Design	Values Incorporated Into This Design
Duct Sealing Requirements for Duct Location and Type	Outdoor, Supply ≤2" w.c.			
	Outdoor, Supply >2" w.c.			
	Outdoor, Exhaust			
	Outdoor, Return			
	Unconditioned Spaces, Supply ≤2" w.c.			
	Unconditioned Spaces, Supply >2" w.c.			
	Unconditioned Spaces, Exhaust			
	Unconditioned Spaces, Return			
	Conditioned Spaces, Supply ≤2" w.c.			
	Conditioned Spaces, Supply >2" w.c.			
	Conditioned Spaces, Exhaust			
	Conditioned Spaces, Return			
	Fan System Power Limitation (Nameplate Horsepower Option or Break Horsepower Option)	Constant Volume		
Variable Volume				
Hydronic (Water Loop) Heat Pump System	Two Position Valve on Each Heat Pump			
	Dead Band			
	Automatic Isolation of Cooling Tower When Not Required			
VAV Fan System	Part-Load Fan Power Limitation			
	Static Pressure Reset			
Hydronic System	Total System Power			
	Variable Flow			
	Automatic Chiller Isolation			
	Automatic Boiler Isolation			
	Water Temperature Reset on Constant Volume Systems			
Fan Speed Control on Heat Rejection Equipment				
Exhaust Air Energy Recovery				
Heat Recovery for Service Water Heating				

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Kitchen Exhaust Hoods with Makeup Air				
Fume Hood with Volume Control or Make Air Temperature Control				
Cooling System Hot Gas Bypass Limitation: Maximum Percentage of Total Capacity				
Radiant Heating System Requirement				
As-Built Record Drawing Submittal Requirement				
Operation Manuals Requirement				
Maintenance Manuals Requirement				
Air System Balancing Requirement				
Hydronic System Balancing Requirement				
HVAC Control Commissioning Requirement				
HVAC System Commissioning Requirement				
Section 7				
Service Water Heating				
Service Water Heating System	Calculated Load			
	Equipment Total Capacity			
Electric Water Heater Minimum Performance	Resistance ≤12 kW			
	Resistance >12 kW			
	Heat Pump			
Gas Storage Water Heater Minimum Performance	≤75,000 Btu/h			
	>75,000 Btu/h			
Gas Instantaneous Water Heater Minimum Performance	>50,000 Btu/h and <200,000 Btu/h			
	≥200,000 Btu/h and <10 gal			
	≥200,000 Btu/h and ≥10 gal			
Oil Storage Water Heater Minimum Performance	≤105,000 Btu/h			
	>105,000 Btu/h			
Oil Instantaneous Water Heater Minimum Performance	≤210,000 Btu/h			
	>210,000 Btu/h and <10 gal			
	>210,000 Btu/h and ≥10 gal			
Gas and Oil Hot-Water Supply Boilers Minimum Performance	≥300,000 Btu/h and <12,500,000 Btu/h			
Gas Hot Water Supply Boiler Minimum Performance	≥4,000 (Btu/h)/gal and ≥10 gal			
Oil Hot Water Supply Boiler Minimum Performance	≥4,000 (Btu/h)/gal and ≥10 gal			
Gas and Oil Pool Heater Minimum Performance				
Heat Pump Pool Heater Minimum Performance				
Unfired Storage Tank Minimum Performance				
Pipe Insulation for Domestic and Service Hot-Water Systems, Conductivity / Minimum Thickness	Nominal Size <1"; Operating Temperature 105°+			

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	Nominal Size 1" to <1.5"; Operating Temperature 105°+			
	Nominal Size 1.5" to <4"; Operating Temperature 105°+			
	Nominal Size 4" to <8"; Operating Temperature 105°+			
	Nominal Size >8"; Operating Temperature 105°+			
Service Water Storage Temperature Control				
Service Water Temperature Maintenance System Automatic Time Switch				
Public Restroom Service Water Outlet Temperature Control				
Service Water Heater Storage Circulating Pump Automatic Time Limit Switch				
Pool Heater Accessible On-Off Switch				
Pool Cover for Heated Pools				
Swimming Pool Heater and Pump Time Switch				
Service Water Heater Inlet & Outlet Heat Traps				
Space & Water Heating Boiler System Requirement				
Section 8				
Power				
Feeder Voltage Drop Requirement				
Branch Circuit Voltage Drop Requirement				
As-Built Record Drawing Submittal Requirement				
Operation Manuals Submission Requirement				
Maintenance Manuals Submission Requirement				
Intended Operation Narrative Submission Requirement				
Section 9				
Lighting				
Interior Lighting System Calculation Method (Building Area or Space-by-Space)				
Gross Lighted Floor Area				
Interior Lighting Power Allowance				
Equivalent Interior Lighting Power Density				
Automatic Interior Lighting Shutoff Control				
Interior Space Lighting Control				
Automatic Interior Space Shutoff Control in Required Spaces				
Automatic Exterior Lighting Control				
Display/Accent Lighting Control Device				
Case Lighting Control Device				
Hotel & Motel Guest Room Lighting Control Device				
Task Lighting Control Device				
Nonvisual Lighting Control Device				
Demonstration Lighting Control Device				
Luminaire Tandem Wiring				
Exit Sign: Maximum Wattage per Face				

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Exterior Luminaire Minimum Lamp Efficacy Requirement				
Total Exterior Lighting Power Allowance				
Tradable Surface Exterior Lighting Power Allowance				
Non-Tradable Surface Exterior Lighting Power Allowance				
Section 10				
Other Equipment				
Minimum Motor Efficiency Requirement				
3600 Open Motor, Minimum Nominal Full-Load Efficiency				
1800 Open Motor, Minimum Nominal Full-Load Efficiency				
1200 Open Motor, Minimum Nominal Full-Load Efficiency				
3600 Enclosed Motor, Minimum Nominal Full-Load Efficiency				
2400 Enclosed Motor, Minimum Nominal Full-Load Efficiency				
1200 Enclosed Motor, Minimum Nominal Full-Load Efficiency				

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Energy Cost Budget	For Budget Building Design			
	For Proposed Building Design			
Section 5				
Building Envelope (Climate Zone 5A)				
Prescriptive Building Envelope Option				
Space-Conditioning Category (Nonresidential, Residential, Semiheated)				
Gross Roof Area				
Roofs: Minimum Solar Reflectance				
Roofs: Minimum Solar Reflective Index				
Roofs: Assembly Maximum U-factor				
Roofs: Minimum Insulation R-Value				
Walls, Above-Grade: Assembly Maximum U-factor				
Walls, Above-Grade: Minimum Insulation R-Value				
Walls, Below-Grade: Assembly Maximum C-factor				
Walls, Below-Grade: Minimum Insulation R-Value				
Floors: Assembly Maximum U-factor				
Floors: Minimum Insulation R-Value				
Slab-On-Grade Floors: Assembly Maximum F-factor				
Slab-On-Grade Floors: Minimum Insulation R-Value				
Opaque Doors: Assembly Maximum U-factor				
Gross Wall Area				
Total Vertical Fenestration Area				
Vertical Glazing: Percent of Wall Area				
Vertical Glazing: Assembly Maximum U-factor				
Vertical Glazing: Assembly Maximum SHGC				
Visible Light Transmittance (VLT)				
Total Skylight Area				
Skylight: Percent of Roof Area				
Skylight: Assembly Maximum U-factor				
Skylight: Assembly Maximum SHGC				
Building Envelope Sealing: Joints Around Fenestration & Doors				
Building Envelope Sealing: Junctions Between Walls & Foundation				
Building Envelope Sealing: Junctions Between Walls at Corners				
Building Envelope Sealing: Junctions Between Walls and Structural Floors or Roofs				
Building Envelope Sealing: Between Walls and Roof or Wall Panels				
Building Envelope Sealing: Utility Service Penetrations				
Building Envelope Sealing: Site-built Fenestration and Doors				
Building Envelope Sealing: Assemblies Used as Plenums or Ducts				
Building Envelope Sealing: Joints, seams and Penetrations of Vapor Retarders				
Building Envelope Sealing: At All Other Openings				
Fenestration: Maximum Air Leakage Requirement				
Door: Maximum Air Leakage Requirement				
Loading Dock Weatherseal Requirement				
Vestibule Requirement				
Eave Vent Baffle Requirement				
Insulation Protection Requirement				
Section 6				
Heating, Ventilating and Air Conditioning				

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	Element	ASHRAE/IESNA Standard 90.1-2007 with 2008 Supplement Requirement	Values In Simulation for Proposed Building Design	Values Incorporated Into This Design
Outdoor Air Quantity Supplied				
Calculated Load	Heating			
	Cooling			
Equipment Capacity	Heating			
	Cooling			
HVAC System Economizer Cycle Requirement	Capacity			
	Controls			
Unitary Air Conditioners, Electrically Operated, Minimum Efficiencies	Air Cooled			
	Water and Evaporatively Cooled			
Condensing Units, Electrically Operated, Minimum Efficiencies	Air Cooled			
	Water or Evaporatively Cooled			
Unitary and Applied Heat Pumps, Electrically Operated, Cooling Mode Minimum Efficiencies	Air Cooled			
	Water Source			
	Groundwater Source			
	Ground Source			
Unitary and Applied Heat Pumps, Electrically Operated, Heating Mode Minimum Efficiencies	Air Cooled			
	Water Source			
	Groundwater Source			
	Ground Source			
Water Chilling Package, Air Cooled, Electrically Operated, Minimum Efficiencies - Compliance Path A	<150 tons			
	≥150 tons			
Water Chilling Package, Water Cooled, Electrically Operated, Positive Displacement, Maximum Efficiency - Compliance Path (A or B)				
Water Chilling Package, Water Cooled, Electrically Operated, Centrifugal, Maximum Efficiencies - Compliance Path (A or B)				
Water Chilling Package, Air Cooled Absorption, Single Effect, Minimum Efficiency - Compliance Path A				
Water Chilling Package, Water Cooled Absorption, Single Effect, Minimum Efficiency - Compliance Path A				
Water Chilling Package, Absorption, Double Effect, Indirect-Fired, Minimum Efficiency - Compliance Path A				
Water Chilling Package, Absorption, Double Effect, Direct-Fired, Minimum Efficiency - Compliance Path A				
Package Terminal Air Conditioners (Cooling Mode) Minimum Efficiency				
Package Terminal Heat Pumps (Cooling Mode) Minimum Efficiency				
Package Terminal Heat Pumps (Heating Mode) Minimum Efficiency				
Single-Package Vertical Air Conditioners (Cooling Mode) Minimum Efficiency				
Single-Package Vertical Heat Pumps (Cooling Mode) Minimum Efficiency				
Single-Package Vertical Heat Pumps (Heating Mode) Minimum Efficiency				
Room Air Conditioners, with Louvered Sides, Minimum Efficiency				
Room Air Conditioners, without Louvered Sides, Minimum Efficiency				
Room Air-conditioner Heat Pumps, with Louvered Sides, Minimum Efficiency				
Room Air-conditioner Heat Pumps, without Louvered Sides, Minimum Efficiency				
Room Air Conditioners, Casement Only, Minimum Efficiency				
Room Air Conditioners, Casement-slider, Minimum Efficiency				
Warm Air Furnaces and Combination Warm Air Furnaces/Air-conditioning Units Minimum Efficiency				

Building Energy Performance Characteristics
 For Compliance with Chapter 11 of Standard 90.1-2007

Project:

Project Location:

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	Element	ASHRAE/IESNA Standard 90.1-2007 with 2008 Supplement Requirement	Values In Simulation for Proposed Building Design	Values Incorporated Into This Design
Warm Air Duct Furnaces Minimum Efficiency				
Warm Air Unit Heaters Minimum Efficiency				
Boilers, Hot Water, Minimum Efficiency				
Boilers, Steam, Minimum Efficiency				
Heat Rejection Equipment Minimum Performance				
Zone Thermostatic Control	One per Zone			
	Dead Band			
	Automatic Off-Hour Shutdown			
	Automatic Off-Hour Setback			
	Optimum Start			
	Automatic Zone Isolation			
Ventilation System Controls	Stair and Shaft Vent Motorized Damper Operation			
	Ventilation Damper Operation			
	Automatic Off-Hour Damper Shutoff			
	Motorized Damper Maximum Leakage Rate			
	Nonmotorized Damper Maximum Leakage Rate			
	Ventilation Fan Automatic Shutoff			
	Demand Control Ventilation			
Heat Pump Auxiliary Heat Control				
Humidifier Preheat Control				
Simultaneous Heating and Cooling Prevention				
Simultaneous Humidification and Dehumidification Prevention				
Freeze Protection and Snow/Ice Melting Systems Control				
Supply Duct Insulation Minimum R-Values				
Return Duct Insulation Minimum R-Values				
Pipe Insulation for Heating Systems, Conductivity / Minimum Thickness				
Pipe Insulation for Domestic and Service Hot-Water Systems, Conductivity / Minimum Thickness				
Pipe Insulation for Cooling Systems, Conductivity / Minimum Thickness				
Duct Sealing Requirements				
Fan System Power Limitation (Nameplate Horsepower Option or Break Horsepower Option)				
Hydronic (Water Loop) Heat Pump System	Two Position Valve on Each Heat Pump			
	Dead Band			

Building Energy Performance Characteristics
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Project:

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	Element	ASHRAE/IESNA Standard 90.1-2007 with 2008 Supplement Requirement	Values In Simulation for Proposed Building Design	Values Incorporated Into This Design
	Automatic Isolation of Cooling Tower When Not Required			
VAV Fan System	Part-Load Fan Power Limitation			
	Static Pressure Reset			
Hydronic System	Total System Power			
	Variable Flow			
	Automatic Chiller Isolation			
	Automatic Boiler Isolation			
	Water Temperature Reset on Constant Volume Systems			
Fan Speed Control on Heat Rejection Equipment				
Exhaust Air Energy Recovery				
Heat Recovery for Service Water Heating				
Kitchen Exhaust Hoods with Makeup Air				
Fume Hood with Volume Control or Make Air Temperature Control				
Cooling System Hot Gas Bypass Limitation: Maximum Percentage of Total Capacity				
Radiant Heating System Requirement				
As-Built Record Drawing Submittal Requirement				
Operation Manuals Requirement				
Maintenance Manuals Requirement				
Air System Balancing Requirement				
Hydronic System Balancing Requirement				
HVAC Control Commissioning Requirement				
HVAC System Commissioning Requirement				
Section 7				
Service Water Heating				
Service Water Heating System	Calculated Load			
	Equipment Total Capacity			
Storage Water Heater Minimum Performance				
Instantaneous Water Heater Minimum Performance				
Hot Water Supply Boilers Minimum Performance				
Pool Heater Minimum Performance				
Unfired Storage Tank Minimum Performance				
Pipe Insulation for Domestic and Service Hot-Water Systems, Conductivity / Minimum Thickness				
Service Water Storage Temperature Control				
Service Water Temperature Maintenance System Automatic Time Switch				
Public Restroom Service Water Outlet Temperature Control				
Service Water Heater Storage Circulating Pump Automatic Time Limit Switch				
Pool Heater Accessible On-Off Switch				

Building Energy Performance Characteristics
 For Compliance with Chapter 11 of Standard 90.1-2007

Project:

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	Element	ASHRAE/IESNA Standard 90.1-2007 with 2008 Supplement Requirement	Values In Simulation for Proposed Building Design	Values Incorporated Into This Design
Pool Cover for Heated Pools				
Swimming Pool Heater and Pump Time Switch				
Service Water Heater Inlet & Outlet Heat Traps				
Space & Water Heating Boiler System Requirement				
Section 8				
Power				
Feeder Voltage Drop Requirement				
Branch Circuit Voltage Drop Requirement				
As-Built Record Drawing Submittal Requirement				
Operation Manuals Submission Requirement				
Maintenance Manuals Submission Requirement				
Intended Operation Narrative Submission Requirement				
Section 9				
Lighting				
Interior Lighting System Calculation Method (Building Area or Space-by-Space)				
Gross Lighted Floor Area				
Interior Lighting Power Allowance				
Equivalent Interior Lighting Power Density				
Automatic Interior Lighting Shutoff Control				
Interior Space Lighting Control				
Automatic Interior Space Shutoff Control in Required Spaces				
Automatic Exterior Lighting Control				
Display/Accent Lighting Control Device				
Case Lighting Control Device				
Hotel & Motel Guest Room Lighting Control Device				
Task Lighting Control Device				
Nonvisual Lighting Control Device				
Demonstration Lighting Control Device				
Luminaire Tandem Wiring				
Exit Sign: Maximum Wattage per Face				
Exterior Luminaire Minimum Lamp Efficacy Requirement				
Total Exterior Lighting Power Allowance				
Tradable Surface Exterior Lighting Power Allowance				
Non-Tradable Surface Exterior Lighting Power Allowance				
Section 10				
Other Equipment				
Minimum Motor Efficiency Requirement				