Apply Defaults

Location: *Typical Residential Spa*

Outdoor Spa Heater Energy Savings

Southern California Gas Company
A Sempra Energy utility

Weather Data

Airport or Climate Zone	CACZ09
Simulation Year	2015

Spa Specifications

		Recommended Values
Spa Type	Residential spa	
Spa Capacity (U.S. gallons)	600	2,000
Footwell Depth (ft)	3.00	4.00
Desired Temperature (F)	90	100
Solar Shading Factor (100%=no sun)	10%	30%
Wind Shielding Factor (100%=no wind)	30%	10%
Spa Activity Factor	0.50	0.50

Spa Hours

Annual Opening Day	1/1/2015	1/1/2015
Annual Closing Day	12/31/2015	12/31/2015
Start of Summer Hours	5/1/2015	5/1/2015
Start of Winter Hours	10/1/2015	10/1/2015
Summer Opening Time	12:00 PM	12:00:00 PM
Summer Closing Time	6:00 PM	8:00:00 PM
Winter Opening Time	2:00 PM	12:00:00 PM
Winter Closing Time	4:00 PM	12:00:00 PM

Spa Heater Specifications

		Recommended Values
Spa Heater Capacity (kBtuh)	200	225
Existing Thermal Efficiency (HHV, %)	82	82
Proposed Thermal Efficiency (HHV, %)	85	94
Annual Start Day	5/1/2015	1/1/2015
Annual End Day	9/30/2015	12/31/2015
Spa Heater Start Time	1:00 PM	4:00 AM
Spa Heater Shutdown Time	4:00 PM	10:00 PM

Spa Cover Specifications

Existing Cover Type	None	
Existing R-Value (hr-ft^2-F/Btu)	0	0
Existing Coverage (% of area)	0%	0%
Proposed Cover Type	None	
Proposed R-Value (hr-ft^2-F/Btu)	0	0
Proposed Coverage (% of area)	0%	0%

Energy Savings Summary

Spa Heater Gas Usage

Existing Gas Usage (therms/year)	53
Proposed Gas Usage (therms/year)	51
Gas Savings (therms/year)	2
Gas Savings (%)	3.5%

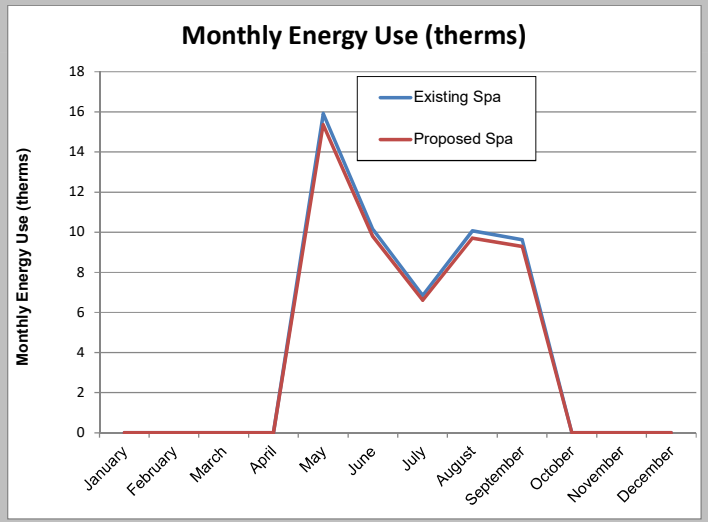
Water Savings Summary

Spa Water Losses

Existing Water Losses (gallons/year)	1,698
Proposed Water Losses (gallons/year)	1,698
Water Savings (gallons/year)	0
Water Savings (%)	0.0%

Spa Energy Use Comparison

Energy Loss	Existing Spa Energy Use (th/yr)	Proposed Spa Energy Use (therm/yr)	Energy Savings
Evaporation	179	173	6
Radiation	135	131	5
Convection	26	25	1
Conduction	1	1	0
Refill	2	2	0
Solar Gain	-291	-281	-10
Total	53	51	2
Month			
January	0	0	0
February	0	0	0
March	0	0	0
April	0	0	0
May	16	15	1
June	10	10	0
July	7	7	0
August	10	10	0
September	10	9	0
October	0	0	0
November	0	0	0
December	0	0	0



Apply Defaults

Location: *Typical Residential Spa*

Outdoor Spa Heater Energy Savings

Southern California Gas Company — A Sempra Energy utility

Weather Data

Airport or Climate Zone	CACZ09
Simulation Year	2015

Spa Specifications

		Recommended Values
Spa Type	Residential spa	
Spa Capacity (U.S. gallons)	600	2,000
Footwell Depth (ft)	3.00	4.00
Desired Temperature (F)	90	100
Solar Shading Factor (100%=no sun)	10%	30%
Wind Shielding Factor (100%=no wind)	30%	10%
Spa Activity Factor	0.50	0.50

Spa Hours

Annual Opening Day	1/1/2015	1/1/2015
Annual Closing Day	12/31/2015	12/31/2015
Start of Summer Hours	5/1/2015	5/1/2015
Start of Winter Hours	10/1/2015	10/1/2015
Summer Opening Time	12:00 PM	12:00:00 PM
Summer Closing Time	6:00 PM	8:00:00 PM
Winter Opening Time	2:00 PM	12:00:00 PM
Winter Closing Time	4:00 PM	12:00:00 PM

Spa Heater Specifications

		Recommended Values
Spa Heater Capacity (kBtuh)	200	188
Existing Thermal Efficiency (HHV, %)	82	82
Proposed Thermal Efficiency (HHV, %)	96	94
Annual Start Day	5/1/2015	1/1/2015
Annual End Day	9/30/2015	12/31/2015
Spa Heater Start Time	1:00 PM	4:00 AM
Spa Heater Shutdown Time	4:00 PM	10:00 PM

Spa Cover Specifications

Existing Cover Type	None	
Existing R-Value (hr-ft^2-F/Btu)	0	0
Existing Coverage (% of area)	0%	0%
Proposed Cover Type	None	
Proposed R-Value (hr-ft^2-F/Btu)	0	0
Proposed Coverage (% of area)	0%	0%

Energy Savings Summary

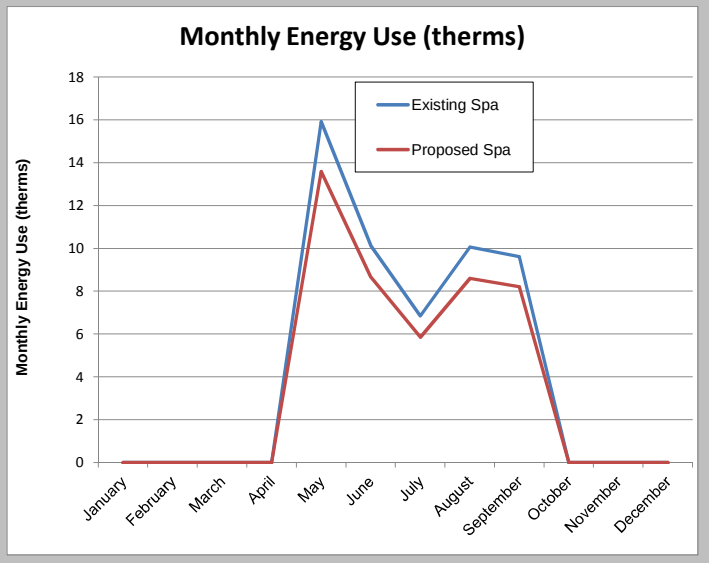
Spa Heater Gas Usage

Existing Gas Usage (therms/year)	53
Proposed Gas Usage (therms/year)	45
Gas Savings (therms/year)	8
Gas Savings (%)	14.6%

Water Savings Summary

Spa Water Losses

Existing Water Losses (gallons/year)	1,698
Proposed Water Losses (gallons/year)	1,698
Water Savings (gallons/year)	0
Water Savings (%)	0.0%

Spa Energy Use Comparison

Energy Loss	Existing Spa Energy Use (th/yr)	Proposed Spa Energy Use (therm/yr)	(therm/yr)
Evaporation	179	153	26
Radiation	135	116	20
Convection	26	22	4
Conduction	1	1	0
Refill	2	2	0
Solar Gain	-291	-249	-42
Total	53	45	8
Month			
January	0	0	0
February	0	0	0
March	0	0	0
April	0	0	0
May	16	14	2
June	10	9	1
July	7	6	1
August	10	9	1
September	10	8	1
October	0	0	0
November	0	0	0
December	0	0	0