

EndUseOptions

| Enumerator | Description | Notes |
|--------------------------------|--------------------------------|-------|
| INTERIOR_LIGHTING | Interior lighting | |
| EXTERIOR_LIGHTING | Exterior lighting | |
| SPACE_HEATING | Space heating | |
| HEAT_PUMP_SUPPLEMENTAL_HEATING | Heat pump supplemental heating | |
| SPACE_COOLING | Space cooling | |
| PUMPS | Pumps | |
| HEAT_REJECTION | Heat rejection | |
| FANS_INTERIOR_VENTILATION | Fans - interior ventilation | |
| FANS_PARKING_GARAGE | Fans - parking garage | |
| HUMIDIFICATION | Humidification | |
| HEAT_RECOVERY | Heat recovery | |
| SERVICE_WATER_HEATING | Service water heating | |
| MOTORS | Motors | |
| TRANSFORMERS | Transformers | |
| OFFICE_EQUIPMENT | Office equipment | |
| COMPUTERS_SERVERS | Computers and servers | |
| COMMERCIAL_COOKING | Commercial cooking | |
| MISC_EQUIPMENT | Misc equipment | |
| INDUSTRIAL_PROCESS | Industrial process | |
| REFRIGERATION_EQUIPMENT | Refrigeration equipment | |
| ELEVATORS_ESCALATORS | Elevators and escalators | |
| OTHER | Other | |

EnergySourceOptions

| Enumerator | Description | Notes |
|-------------------------|-------------------------|--------------------------------|
| ELECTRICITY | Electricity | |
| NATURAL_GAS | Natural gas | |
| PROPANE | Propane | |
| FUEL_OIL | Fuel oil | |
| STEAM | Steam | |
| PURCHASED_HOT_WATER | Purchased hot water | |
| PURCHASED_CHILLED_WATER | Purchased chilled water | |
| ON_SITE_RENEWABLES | On-site renewables | Used primarily in AnnualResult |
| OTHER | Other | |

Output2019ASHRAE901

| Name | Description | Data Type | Units | Range | Req | Notes |
|---|--|------------------|-------|-------|-----|--|
| id | Scope-unique reference identifier for instances of this data group. | ID | | | ✓ | |
| reporting_name | Descriptive name used in RCT reports if id is not already a descriptive name | String | | | | |
| notes | Supplementary information to provide context to the model reviewer | String | | | | |
| output_instance | References output that correspond to specific simulation model. | {OutputInstance} | | | | A seperate file is expected for each simulation model including outputs that correspond with building rotations. |
| performance_cost_index | Performance cost index for the project | Numeric | | | | This output is appropriate for the overall project not specific instance of a model. |
| baseline_building_unregulated_energy_cost | baseline building unregulated energy cost. | Numeric | | | | The units are the local monetary units such as dollars. This output is appropriate for the overall project not specific instance of a model. |
| baseline_building_regulated_energy_cost | baseline building regulated energy cost. | Numeric | | | | The units are the local monetary units such as dollars. This output is appropriate for the overall project not specific instance of a model. |

| Name | Description | Data Type | Units | Range | Req | Notes |
|--|---|-----------|-------|-------|-----|--|
| baseline_building_performance_energy_cost | baseline building performance energy cost. | Numeric | | | | The units are the local monetary units such as dollars. This output is appropriate for the overall project not specific instance of a model. |
| total_area_weighted_building_performance_factor | Total area weighted building performance factor | Numeric | | | | This output is appropriate for the overall project not specific instance of a model. |
| performance_cost_index_target | Performance cost index target for the project | Numeric | | | | This output is appropriate for the overall project not specific instance of a model. |
| total_proposed_building_energy_cost_including_renewable_energy | Total proposed building energy cost including renewable energy. | Numeric | | | | The units are the local monetary units such as dollars. This output is appropriate for the overall project not specific instance of a model. |
| total_proposed_building_energy_cost_excluding_renewable_energy | Total proposed building energy cost excluding renewable energy. | Numeric | | | | The units are the local monetary units such as dollars. This output is appropriate for the overall project not specific instance of a model. |
| percent_renewable_energy_savings | Percent renewable energy savings | Numeric | | | | This output is appropriate for the overall project not specific instance of a model. |

OutputInstance

| Name | Description | Data Type | Units | Range | Req | Notes |
|--------------------------|---|------------------------------------|-------|----------|-----|---|
| id | Scope-unique reference identifier for instances of this data group. | ID | | | ✓ | |
| reporting_name | Descriptive name used in RCT reports if id is not already a descriptive name | String | | | | |
| notes | Supplementary information to provide context to the model reviewer | String | | | | |
| ruleset_model_type | Describes the current model instance for rulesets with multiple simulation models | <RulesetModelOptions2019ASHRAE901> | | | | |
| rotation_angle | Rotation angle of the building model. | Numeric | | ≥0, <360 | | Usually 0, 90, 180, or 270. |
| unmet_Load_hours | Unmet load hours for heating and cooling | Numeric | hr | | ✓ | This would be the coincident unmet load hours so if the same hour is during heating and during cooling it would only count as one hour. |
| unmet_Load_hours_heating | Unmet load hours for heating | Numeric | hr | | ✓ | |

| Name | Description | Data Type | Units | Range | Req | Notes |
|-----------------------------------|--|------------------|-------|-------|-----|--|
| unmet_occupied_load_hours_heating | Unmet load hours for heating when the zone is occupied | Numeric | hr | | ✓ | |
| unmet_load_hours_cooling | Unmet load hours for cooling | Numeric | hr | | ✓ | |
| unmet_occupied_load_hours_cooling | Unmet load hours for cooling when the zone is occupied | Numeric | hr | | ✓ | |
| annual_source_results | Annual results by source | {{SourceResult}} | | | | Contains a list of results by energy source. |
| building_peak_cooling_load | Building peak cooling load | Numeric | W | | ✓ | |
| annual_end_use_results | Annual end use results | {{EndUseResult}} | | | | Contains a list of results by end use and energy source. |

SourceResult

| Name | Description | Data Type | Units | Range | Req | Notes |
|--------------------|--|-----------------------|-------|-------|-----|--|
| id | Scope-unique reference identifier for instances of this data group. | ID | | | ✓ | |
| reporting_name | Descriptive name used in RCT reports if id is not already a descriptive name | String | | | | |
| notes | Supplementary information to provide context to the model reviewer | String | | | | |
| energy_source | End use type | <EnergySourceOptions> | | | ✓ | |
| annual_consumption | Annual energy consumption | Numeric | J | | ✓ | For energy_source ON_SITE_RENEWABLES this value is negative. |
| annual_demand | Annual site demand | Numeric | J | | ✓ | This corresponds to the coincident demand for end-use results. |
| annual_cost | Annual cost | Numeric | | | ✓ | The units are the local monetary units such as dollars. For energy_source ON_SITE_RENEWABLES this value is negative. |

EndUseResult

| Name | Description | Data Type | Units | Range | Req | Notes |
|----------------|--|-----------|-------|-------|-----|-------|
| id | Scope-unique reference identifier for instances of this data group. | ID | | | ✓ | |
| reporting_name | Descriptive name used in RCT reports if id is not already a descriptive name | String | | | | |

| Name | Description | Data Type | Units | Range | Req | Notes |
|-----------------------------------|---|-----------------------|-------|-------|-----|-------|
| notes | Supplementary information to provide context to the model reviewer | String | | | | |
| type | End use type | <EndUseOptions> | | | ✓ | |
| energy_source | End source | <EnergySourceOptions> | | | ✓ | |
| annual_site_energy_use | Annual site energy use | Numeric | J | | ✓ | |
| annual_site_coincident_demand | Annual site coincident demand | Numeric | J | | ✓ | |
| annual_site_non_coincident_demand | Annual site non-coincident demand | Numeric | J | | ✓ | |
| is_regulated | Indicates whether the end use consumption is from regulated equipment | Boolean | | | | |