# how to read an energy model



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### learning objectives

Review the core components of an energy modeling report, including key definitions, inputs, assumptions and results

Identify which design team conversations and analysis strategies are key to avoiding common modeling errors and analysis pitfalls

Compare & contrast the three most common types of modeling [design performance, building energy, & building operational]

Discuss how performance simulations can effectively inform design decisions throughout each phase of the design process

#### what is a model?

In its simplest form, an energy model is a **calculation engine** that accepts **inputs** such as building geometry, system characteristics, and operating schedules and produces **outputs** such as performance comparisons and compliance reports - AIA

### inputs

project specifications: location, form, size, orientation, materials, lighting, power,

service hot water, conveyance, renewable energy and HVAC systems

operational assumptions: weather, program, occupancy and usage patterns

#### outputs

energy: demand, consumption, cost, by end use, by fuel type, savings

performance: carbon, water, thermal comfort, luminance/illuminance/glare

## compliance reporting

purpose: demonstrate required level of **energy** performance

intent: compliance - not decision making

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Singer or hall water		9.0		10		10		Si Si	0%	0%
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#### Performance Rating Method Compliance Report **General Information** Midrastleton Office Building Date October 5, 2006 Project Name: Project Address: 2850 W. Washington Ave. City: Las Vegas, NV Designer of Record Maddlestoburn Architects 702-020-0400 Telephone: Contact Person: 701-014-9284 Fenray Constrablik Telephone: Simulation Program: eQUEST v.3.5.5 Principal Heating Source: ☐ Fossil Fuel Climate Zone: 3B □ Electricity Quantity of Floors: □ Solar/Site Recovered Las Vegas, NV [LAS-VENV.bin] Weather Data: □ Other Utility Rate [Electricity] Nevada Power Large General Service [average \$0.0935/kWh] Utility Rate [Natural Gas] Southwest Gas Medium General Service [average \$1.040/therm] Utility Rate [Steam/Hot Water] Utility Rate [Chilled Water] Utility Rate [Other]

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	Space Su	mmary	
Building Use	Conditioned Area [sf]	Unconditioned Area [sf]	Total Area [sf]
1. Office [open plan]	40,000		40,000
2. Office [private]	30,000		30,000
3. Corridor	10,000		10,000
4. Lobby	5,000		5,000
5. Restrooms	5,000		5,000
6. Conference room	4,000		4,000
7. Mechanical/electrical room	4,000		4,000
8. Copy room	2,000		2,000
Total	100,000		100,000
	Advisory	Messages	
	Proposed Building Design	Baseline Building	Difference
Number of unmet heating hours	0	0	0
Number of unmet cooling hours	0	0	0
Number of warnings	0	0	0
Number of error messages	0	0	0
Number of defaults overridden	1	1	0