

Acknowledgments vii	
Introduction ix	
Building Information Models and Modeling ix	
The cost of buildings ix	
See, change x	
BIM for the rest of us xi	
What this book is, and isn't xii	
A word on the case studies xiii	
1	BIM and Sustainable Design 1
	The emergence of Building Information Modeling 1
	BIM for design 6
	High-performance architecture 16
	Case study: Moonrise Ranch 23
2	Design Software 29
	BIM applications 29
	Complementary software 38
	Further reading 49
	Case Study: Parameterized Hauer Curtain Wall 49
3	Site Analysis 55
	Developing a site model 57
	Analyzing the site 65
	Case Study: House in Sonoma 74
4	Massing Analysis 79
	Creating massing models 79
	Perimeter/volume ratios: optimizing for envelope quantity 83
	Confirming desirable and undesirable views 85
	Preliminary cost and feasibility analysis 87
	Preliminary passive heating and cooling design data 89
	Case Study: New High School 100
5	Solar Geometry and Daylighting 105
	Shade from the sun 106
	Daylighting 116
	Case Study: Ross Street House 128
6	Passive Cooling 133
	Appropriate responses for local climates 135
	Rules of thumb and sizing guidelines for cooling strategies 139
	Case Study: Hadlow College Rural Regeneration Centre 153
7	Passive Heating 159
	Rules of thumb and sizing guidelines for heating strategies 160
	Whole-building heat loss 162
	Whole-building heat gain 170
	Case Study: Battelle Darby Creek Environmental Center 177
8	Onsite Energy Systems 183
	Solar photovoltaics 185
	Azimuth and elevation 192
	Solar thermal systems 192
	Wind turbines 197
	Case Study: Cascadia Center for Sustainable Design and Construction 200

9 Building Hydrology 205

- Site design for water 206
- Rainwater harvesting 209
- Plumbing fixture efficiency 214
- Sizing constructed wetlands 215
- Gutter sizing 220
- Case Study: Bee Ranch 221

10 Materials and Waste 225

- Material takeoffs and cost calculations 225
- Advanced framing 232
- Sheet materials 237
- Preliminary life cycle analysis 239

- LEED material calculations 243
- Case Study: Loblolly House 245

11 Collaboration 249

- Imported backgrounds 249
- Exporting files 251
- Project coordination 264
- Case Study: Paisano Senior Housing 272

Afterword 275

Bibliography and References 279

Index 283

<http://www.pbookshop.com>