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The authors of "Green from the Ground Up" explore the design and construction of self-sufficient houses. With unequaled knowledge and a passion for the subject, the authors walk readers through the process of building and living in a truly green home.

What can we really do about the climate emergency? The inconvenient truth is that we are causing the climate crisis with our carbon intensive lifestyles and that fixing – or even just slowing – it will affect all of us. But it can be done.

150 Best Sustainable House Ideas features the latest innovations in environmentally friendly home design. From heating and cooling solutions to wind energy systems, solar paneling, thermal glazing, and even Trombe walls, the ideas featured inside are complemented by photographs and architectural plans of gorgeous, sustainable houses around the world.

This is the decade for climate action. Internal and external stakeholders demand action. How we choose to act in the next ten years will determine our foreseeable future. Businesses hold a critical role for climate futures. The need for businesses to reduce their carbon footprint is now unquestioned, but how to achieve reductions in a credible way is neither clear nor easy once you've tackled the obvious energy culprits. Climate Positive Business lays out the path of business climate strategy, highlighting how your business must set goals, measure impact, and

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improve performance. Greenhouse gas protocols can instruct you on the core accounting process that lies at the heart of climate strategy. At least as important to success are the details that protocols don't tell you: the sticking points; the areas of controversy, and the best practices. Rooted in real experience and written in an entertaining and engaging style, this book provides you with the tips, tools, and techniques to tackle your company's carbon footprint, and it helps you do so in a way that is credible and appropriately ambitious to meet stakeholder expectations. The book will equip you with tools to think critically about GHG reduction, carbon offsets, and carbon removal, as well as help ensure we collectively implement real solutions to slow and eventually reverse the climate crisis. It includes lessons learned from real-world consulting projects and provides a plan of action for readers to implement. A go-to book for business looking to understand, manage, and reduce their carbon footprint, it is an invaluable resource for sustainable business practitioners, consultants, and those aspiring to become climate champions.

#1 bestselling author and acclaimed venture capitalist John Doerr reveals a sweeping action plan to conquer humanity's greatest challenge: climate change. In 2006, John Doerr was moved by Al Gore's *An Inconvenient Truth* and a challenge from his teenage daughter: "Dad, your generation created this problem. You better fix it." Since then, Doerr has searched for solutions to this existential problem—as an investor, an advocate, and a philanthropist. Fifteen years later, despite breakthroughs in batteries, electric vehicles, plant-based proteins, and solar and wind power, global warming continues to get worse. Its impact is all around us: droughts, floods, wildfires, the melting of the polar ice caps. Our world is squarely in a climate crisis and on the brink of a climate disaster. Yet despite our state of emergency, climate

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change has yet to be tackled with the urgency and ambition it demands. More than ever, we need a clear course of action. What if the goal-setting techniques that powered the rise of today's most innovative organizations were brought to bear on humanity's greatest challenge? Fueled by a powerful tool called Objectives and Key Results (OKRs), **SPEED & SCALE** offers an unprecedented global plan to cut greenhouse gas emissions before it's too late. Used by Google, Bono's ONE foundation, and thousands of startups the world over, OKRs have scaled ideas into achievements that changed the world. With clear-eyed realism and an engineer's precision, Doerr identifies the measurable OKRs we need to reduce emissions across the board and to arrive by 2050 at net zero—the point where we are no longer adding to the heat-trapping carbon in the atmosphere. By turns pragmatic and inspiring, **SPEED & SCALE** intersperses Doerr's wide-ranging analysis with firsthand accounts from Jeff Bezos, Christiana Figueres, Al Gore, Mary Barra, Bill Gates, and other intrepid policy leaders, entrepreneurs, scientists, and activists. A launchpad for those who are ready to act now, this book is geared to leaders in every walk of life. With a definitive action plan, the latest science, and a rising climate movement on our side, we can still reach net zero before it is too late. But as Doerr reminds us, there is no more time to waste.

In the *Design Professional's Guide to Zero Net Energy Buildings*, Charles Eley draws from over 40 years of his own experience, and interviews with other industry experts, to lay out the principles for achieving zero net energy (ZNE) buildings, which produce as much energy as they use over the course of a year. Eley emphasizes the importance of building energy use in achieving a sustainable future; describes how building energy use can be minimized through smart design and energy efficiency technologies; and presents practical information on how to

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incorporate renewable energy technologies to meet the lowered energy needs. The book shows the reader through examples and explanations that these solutions are viable and cost effective.

"Net zero energy buildings, equilibrium buildings or carbon neutral cities – depending on location and the reasons for making the calculation, the numbers are run differently. The variety of terms in use indicates that a scientific method is still lacking – which is a problem not just in regard to international communication, but also with respect to planning processes as a response to energy challenges. The clarification and meaning of the most important terms in use is extremely important for their implementation. Since October 2008, a panel of experts from an international energy agency has concerned itself with these topics as part of a project entitled “Towards Net Zero Energy Solar Buildings”. The objective is to analyse exemplary buildings that are near a zero-energy balance in order to develop methods and tools for the planning, design and operation of such buildings. The results are documented in this publication: In addition to the presentation of selected projects, it is not just architectural showcase projects that are shown – the focus is on relaying knowledge and experience gained by planners and builders. Even if many questions remain unanswered: Project examples that have already been implemented prove on a practical basis that the objective of a zero energy balance is already possible today."

This book presents 18 in-depth case studies of net zero energy buildings—low-energy building that generate as much energy as they consume over the course of a year—for a range of project types, sizes, and U.S. climate zones. Each case study describes the owner’s goals, the design and construction process, design strategies, measurement and verification activities

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and results, and project costs. With a year or more of post-occupancy performance data and other project information, as well as lessons learned by project owners and developers, architects, engineers, energy modelers, constructors, and operators, each case study answers the questions: What were the challenges to achieving net zero energy performance, and how were these challenges overcome? How would stakeholders address these issues on future projects? Are the occupants satisfied with the building? Do they find it comfortable? Is it easy to operate? How can other projects benefit from the lessons learned on each project? What would the owners, designers, and constructors do differently knowing what they know now? A final chapter aggregates processes to engage in and pitfalls to avoid when approaching the challenges peculiar to designing, constructing, and owning a net zero energy building. By providing a wealth of comparable information, this book which will flatten the learning curve for designing, constructing, and owning this emerging building type and improve the effectiveness of architectural design and construction.

Written by an architect who is director of sustainability at a global architecture firm, this is a guide for architects and related construction professionals to design and build net zero commercial architecture. It offers practical strategies, step-by-step technical analysis, and valuable examples in addition to developed case studies. With a focus on application in a variety of building types and scales, the book also develops a broad based understanding of all the integrated principles involved in achieving net zero energy. The book is a practical guide for anyone venturing into net zero energy design, construction and operation, and also serves as an excellent resource on a variety of

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sustainable design topics.

- New York Times bestseller • The 100 most substantive solutions to reverse global warming, based on meticulous research by leading scientists and policymakers around the world “At this point in time, the Drawdown book is exactly what is needed; a credible, conservative solution-by-solution narrative that we can do it. Reading it is an effective inoculation against the widespread perception of doom that humanity cannot and will not solve the climate crisis. Reported by-effects include increased determination and a sense of grounded hope.” —Per Espen Stoknes, Author, What We Think About When We Try Not To Think About Global Warming “There’s been no real way for ordinary people to get an understanding of what they can do and what impact it can have. There remains no single, comprehensive, reliable compendium of carbon-reduction solutions across sectors. At least until now. . . . The public is hungry for this kind of practical wisdom.” —David Roberts, Vox “This is the ideal environmental sciences textbook—only it is too interesting and inspiring to be called a textbook.” —Peter Kareiva, Director of the Institute of the Environment and Sustainability, UCLA In the face of widespread fear and apathy, an international coalition of researchers, professionals, and scientists have come together to offer a set of realistic and bold solutions to climate change. One hundred techniques and practices are described here—some are well known; some you may have never heard of. They range from clean energy to educating girls in lower-income countries to land use practices that pull

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carbon out of the air. The solutions exist, are economically viable, and communities throughout the world are currently enacting them with skill and determination. If deployed collectively on a global scale over the next thirty years, they represent a credible path forward, not just to slow the earth's warming but to reach drawdown, that point in time when greenhouse gases in the atmosphere peak and begin to decline. These measures promise cascading benefits to human health, security, prosperity, and well-being—giving us every reason to see this planetary crisis as an opportunity to create a just and livable world.

'Material Revolution' offers a systematic overview of the currently available sustainable materials and provides the reader with all the information he needs to assess a new material's suitability and potential for a given project.

Passive is the new green. Passive Houses—well insulated, virtually airtight buildings—can decrease home heating consumption by an astounding 90 percent, making them not only an attractive choice for prospective homeowners, but also the right choice for a sustainable future. The Greenest Home showcases eighteen of the world's most attractive Passive Houses by forward-thinking architects such as Bernheimer Architecture, Olson Kundig Architects, and Onion Flats, among many others. Each case study consists of a detailed project description, plans, and photographs. An appendix lists helpful technical information. Including a mix of new construction and retrofit projects built in a variety of site conditions, The Greenest Home

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is an inspiring sourcebook for architects and prospective homeowners, as well as a useful tool for students, and builders alike.

The passive house standard is developing more and more into the international key currency of energy-efficient construction. Passive houses are being erected in almost all parts of the world and for all types of users. "Plus energy" buildings and entire zero-energy districts show that the passive house standard is also a sound basis for advanced efficiency strategies. At the same time, many architects are unsure about the specifics: What do passive houses really deliver, and what errors need to be avoided during planning? The book "Passive House Design" gives readers confidence in dealing with the passive house standard from the very first design draft. It shows how much scope for design there is in passive houses and explains design strategies that lead to better passive buildings. Detailed documentations of both residential and non-residential buildings illustrate how design, construction and building technology combine in passive houses. Chapters on building physics, building services engineering and energy balancing provide the required detailed knowledge for being able to implement your own passive house projects.

This book focuses on the ways in which military installations and small cities can implement and integrate triple net planning and energy, water, and waste sustainability strategies into broad installation operational management, arrive at the best decision, create policy and communicate effectively to stakeholders. It explores current and

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emerging technologies, methods, and frameworks for energy conservation, efficiency, and renewable energy within the context of triple net zero implementation practice. Recognizing that the challenge extends beyond finding technological solutions to achieve triple net zero outcomes, the contributions also address the need for a systemic view in the planning phase, as well as adequate communication and policy measures and incentives.

Energy efficiency begins at home. Nobody knows this better than homeowners, remodelers, builders, and designers looking to cut back and save more. This is the place to start--"The Energy-Smart House" is a must-have for those concerned about rising home energy costs. Written by builders and energy experts from all over the country, the contributing authors are seasoned professionals whose articles have appeared in "Fine Homebuilding "magazine. Becoming "energy smart" is the goal, and this book details the methods, materials, and technology needed to achieve just that. Along with 200 photos and 50 illustrations, the insight shared from the pros will give readers the most up-to-date ways to keep costs down.

What do we mean by net zero energy? Zero operating energy? Zero energy costs? Zero emissions? There is no one answer: approaches to net zero building vary widely across the globe and are influenced by different environmental and cultural contexts. Net Zero Energy Building: Predicted and Unintended Consequences presents a comprehensive overview of variations in 'net zero' building practices. Drawing on

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examples from countries such as the United States, United Kingdom, Germany, Japan, Hong Kong, and China, Ming Hu examines diverse approaches to net zero and reveals their intended and unintended consequences. Existing approaches often focus on operating energy: how to make buildings more efficient by reducing the energy consumed by climate control, lighting, and appliances. Hu goes beyond this by analyzing overall energy consumption and environmental impact across the entire life cycle of a building—ranging from the manufacture of building materials to transportation, renovation, and demolition. Is net zero building still achievable once we look at these factors? With clear implications for future practice, this is key reading for professionals in building design, architecture, and construction, as well as students on sustainable and green architecture courses.

CLIMATE CHANGE and the road to NET-ZERO is a story of how humanity has broken free from the shackles of poverty, suffering, and war and for the first time in human history grown both population and prosperity. It's also a story of how a single species has reconfigured the natural world, repurposed the Earth's resources, and begun to re-engineer the climate. The book uses these conflicting narratives to explore the science, economics, technology, and politics of climate change. NET-ZERO blows away the entrenched idea that solving global warming requires a trade-off between the economy and environment, present and future generations, or rich and poor, and reveals why a twenty-year transition to a zero carbon system is a win-win solution for all on planet

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Earth. From the Author "I wrote Climate Change and the road to Net-Zero to provide a generalist reader with a clear, comprehensive, and objective take on the issues surrounding climate change and air pollution. The book walks the reader through a history of energy, innovation, and the rise of human civilisation; how scientists have come to understand our past climate and can now forecast future change; the problems economists encounter as they attempt to piece together the potential monetary and social damages from climate inaction; and a technology agnostic assessment of potential climate change solutions (from climate-engineering to mitigation) including their costs, risks, and limitations. The book demonstrates why sustainable technologies such as wind, solar, and batteries get cheaper with scale of production, not time, and why a rapid transition to a fully-fledged net-zero system will end up significantly cheaper than remaining bound to fossil fuels, whilst also avoiding the worst impacts of climate change, and preventing nearly eight million premature deaths each year from air pollution. I hope Climate Change and the road to Net-Zero delivers an understanding of humanity's relationship with Earth that is as intriguing as Simon Lewis and Mark Maslin's The Human Planet, or Yuval Noah Harari's Sapiens. I very much hope too that the book conveys the passion and call to action of David Wallace-Well's The Uninhabitable Earth, coupled with the sober economic analysis of The Climate Casino by William Nordhaus or Capital in the 21st century by Thomas Piketty, and that it provides the technical rigour of Sustainable Energy Without The Hot Air by David

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MacKay, the rationality of Hans Rosling's Factfulness, and the eternal hope of The Future We Choose by Christiana Figueres and Tom Rivett-Carnac. I believe net-zero will be cheaper, cleaner, safer, more reliable, more sustainable, and will create more employment than if we remain bound to fossil fuels. After reading the book, I hope you will agree." Mathew Hampshire-Waugh, Author.

Runaway climate change and rampant inequality are ravaging the world and costing a fortune. Who will help lead us to a better future? Business. These massive dual challenges—and other profound shifts, such as pandemics, resource pressures, and shrinking biodiversity—threaten our very existence. Other megatrends, such as the push for a clean economy and the unprecedented focus on diversity and inclusion, offer exciting new opportunities to heal the world, and prosper by doing so. Government cannot do this alone. Business must step up. In this seminal book, former Unilever CEO Paul Polman and sustainable business guru Andrew Winston explode fifty years of corporate dogma. They reveal, for the first time, key lessons from Unilever and other pioneering companies around the world about how you can profit by fixing the world's problems instead of creating them. To thrive today and tomorrow, they argue, companies must become "net positive"—giving more to the world than they take. A net positive company: Improves the lives of everyone it touches, from customers and suppliers to employees and communities, greatly increasing long-term shareholder returns in the process. Takes ownership of all the social and environmental impacts its

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business model creates. This in turn provides opportunities for innovation, savings, and building a more humane, connected, and purpose-driven culture. Partners with competitors, civil society, and governments to drive transformative change that no single group or enterprise could deliver alone. This is no utopian fantasy. Courageous leaders are already making it real—and the stakes couldn't be higher. With bold vision and compelling stories, Net Positive sets out the principles and practices that will deliver the scale of change and transformation the world so desperately needs. Join the movement now at netpositive.world

The essential guide to environmental control systems in building design For over 25 years Heating, Cooling, Lighting: Sustainable Design Strategies Towards Net Zero Architecture has provided architects and design professionals the knowledge and tools required to design a sustainable built environment at the schematic design stage. This Fifth Edition offers cutting-edge research in the field of sustainable architecture and design and has been completely restructured based on net zero design strategies. Reflecting the latest developments in codes, standards, and rating systems for energy efficiency, Heating, Cooling, Lighting: Sustainable Design Strategies Towards Net Zero Architecture includes three new chapters: Retrofits: Best practices for efficient energy optimization in existing buildings Integrated Design: Strategies for synergizing passive and active design Design Tools: How to utilize the best tools to benchmark a building's sustainability and net zero potential Heating, Cooling, Lighting: Sustainable Design

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Strategies Towards Net Zero Architecture is a go-to resource for practicing professionals and students in the fields of environmental systems technology or design, environmental design systems, construction technology, and sustainability technology. Passive House Details introduces the concepts, principles, and design processes of building ultralow-energy buildings. The objective of this book is to provide design goals, research, analysis, systems, details, and inspiring images of some of the most energy-efficient, carbon-neutral, healthy, and satisfying buildings currently built in the region. Other topics included: heat transfer, moisture management, performance targets, and climatic zones. Illustrated with more than 375 color images, the book is a visual catalog of construction details, materials, and systems drawn from projects contributed from forty firms. Fourteen in-depth case studies demonstrate the most energy-efficient systems for foundations, walls, floors, roofs, windows, doors, and more. The building industry is one of the largest energy consumers and countries all over the world are striving to design buildings that satisfy the user's expectations while containing their energy consumption. In this context, zero-energy buildings have emerged as a technological paradigm that can solve this global issue, but its implementation in different contexts has brought a profound debate about its technical, social, and environmental limitations. Thanks to contributions from a variety of scholars from different countries, this book explores different aspects of the zero-energy buildings and gives the reader a broad view of the feasibility of implementation in

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different contexts.

The green building movement has produced hundreds of “how-to” books and websites that are filled with tips about green building and what homeowners should do to go green. While helpful and informative, when it comes to making actual purchasing and installation decisions, these books do not make it any easier for a homeowner to prioritize against a budget. Here, Schifman shares her knowledge and experience for others to use in their journey toward a greener way of living. Whether the reader is building a new home or doing a minor remodel, a homeowner needs a framework by which to guide their decisions. These decisions are based on values, and the author posits that there are really only three reasons to go green: For Our Health: By building more sustainably, we reduce our exposure to harmful chemicals and toxins. For Our Wealth: By building a more durable home and being more efficient with resources like water and electricity, we reduce our monthly utility bills and ongoing maintenance expenses. For Our Soul: Collectively doing the right thing for our planet does make a difference—and that is soul-nourishing. Learn the logistics of choosing windows, insulation, appliances, and lighting. Find out about FSC certified wood and about using reclaimed materials. Here is everything you need to make your home sustainable. There is a growing concern about fluctuating energy prices, energy security, and the impact of climate change. Buildings are amongst the primary energy consumers in the world. This fact underlines the importance of targeting building energy use as a key to

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decreasing any nation's energy consumption. According to the American Society of Heating, Refrigeration and Air Conditioning Engineers (ASHRAE) Research Strategic Plan 2010-2015, even limited deployment of Net-Zero-Energy buildings within this timeframe will have a beneficial effect by reducing the pressure for additional energy and power supply and the reduction of GHG emissions. The building sector is poised to significantly reduce energy use by incorporating energy-efficient strategies into the design, construction, and operation of new buildings and retrofits to improve the efficiency of existing buildings.

Net Zero Energy Buildings (NZEB): Concepts, Frameworks and Roadmap for Project Analysis and Implementation provides readers with the elements they need to understand, combine and contextualize design decisions on Net Zero Energy Buildings. The book is based on learned lessons from NZEB design, construction, operation that are integrated to bring the most relevant topics, such as multidisciplinary, climate sensitivity, comfort requirements, carbon footprints, construction quality and evidence-based design. Chapters introduce the context of high performance buildings, present overviews of NZEB, cover the performance thresholds for efficient buildings, cover materials, micro-grid and smart grids, construction quality, performance monitoring, post occupancy evaluation, and more. Offers a roadmap for engaging in energy efficiency in high performance buildings projects Combines solid grounding in core concepts, such as energy efficiency, with a wider context that includes the technical,

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socio-cultural and environmental dimensions Covers key areas for decision-making Provides a logical framework to analyze projects in the context of environmental change Presents worldwide examples and cases for different climates and societies An energy expert shows why hydrogen can fight climate change and become the fuel of the future We're constantly told that our planet is in crisis; that to save it, we must stop traveling, stop eating meat, even stop having children. But in *The Hydrogen Revolution*, Marco Alverà argues that we don't need to upend our lives. We just need a new kind of fuel: hydrogen. From transportation and infrastructure to heating and electricity, hydrogen could eliminate fossil fuels, boost economic growth, and encourage global action on climate change. It could also solve the most bedeviling aspects of today's renewable energy—from transporting and storing wind and solar energy and their vulnerability to weather changes to the inefficiency and limited utility of heavy, short-lasting batteries. *The Hydrogen Revolution* isn't just a manifesto for a powerful new technology. It's a hopeful reminder that despite the gloomy headlines about the fate of our planet, there's still an opportunity to turn things around.

Highlighted by more than 350 full-color photographs and illustrations, a comprehensive study of sustainable, energy-efficient, and healthful home construction offers a detailed explanation of green building fundamentals that

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covers such topics as site planning, materials selection, efficient energy alternatives, indoor air quality, and more at every stage in the construction process, from framing to finishes. Original.

Energy Free is designed to equip building professionals and homeowners alike with a toolkit for creating homes that use no more energy than they produce—this means homes that are free from the vagaries of energy-price fluctuations and that help to free society of the high political and environmental costs of fossil fuels. Individuals and institutions have been working toward "zero-energy" homes for decades. This volume is the first record of those collective efforts, distilling their experience into a practical and comprehensive how-to guide. The author includes resource information and step-by-step guidance on how to make decisions that will yield an energy-free residential project, whether a single-family home or multifamily building, new or existing, in an urban or a rural setting. The unique needs and opportunities of each context are addressed. The principal topics include: Project boundaries (why you have to consider not only your home's behavior, but also your own) Prioritizing strategies (e.g., insulation vs. photovoltaics) Economics (including payback periods and incentives) How to minimize a building's energy needs How to minimize your energy needs How to power the energy needs that remain The critical role of integrated project

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planning Energy Free offers a wide array of resource information, including detailed window and insulation comparisons; assessments of the relative contribution of different building elements; and overall performance. It draws on research and empirical data from myriad sources, including the Department of Energy's Building America program; Sacramento Municipal Utility District's House of the Future; Passiv Haus Institute in Europe and the Passive House Institute of the U.S.; Florida Solar Energy Center; Living Building Challenge; Affordable Comfort, Inc.'s, Thousand Home Challenge; and many pioneering individual home projects across North America.

This practical guidebook to zero energy homes focuses on real costs and savings, exploring such topics as site selection and passive design, heating and cooling, and financial resources and incentives. Original.

Housing is a major contributor to CO₂ emissions in Europe and America today and the construction of new homes offers an opportunity to address this issue. Providing homes that achieve "zero carbon", "carbon neutral", "zero-net energy" or "energy-plus" standard is becoming the goal of more innovative house-builders globally, whilst energy providers seek to decarbonise the energy supply to new and existing development. Various new technical systems for achieving these goals are beginning to emerge. For example the passive house whose energy

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requirement for space heating and cooling is almost zero; the smart grid that has revolutionized the management of energy, whilst enabling the connection of small-scale, renewable energy producers and electric vehicles to the grid; or the European super-grid which will enable zero carbon energy to be generated in the Sahara desert and stored in Norway. This book explores the diverse approaches that are being adopted around the world to deliver zero carbon homes and the different societal systems and geographic circumstances in which they have developed. It postulates a roadmap for delivering zero carbon homes, together with a toolbox approach for policy and practice to suit particular national and local circumstances. A series of case studies are presented that offer lessons for delivering zero carbon homes. These examples are also used to demonstrate how prototype systems can move into the mainstream. The book highlights some of the instruments and mechanisms that could be used to support this transformation and addresses the wider implications of introducing these innovative systems in terms of industry, lifestyle and urban form.

Climate change: watershed or endgame? In this compelling new book, Noam Chomsky, the world's leading public intellectual, and Robert Pollin, a renowned progressive economist, map out the catastrophic consequences of unchecked climate change—and present a realistic blueprint for change: the Green New Deal.

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Together, Chomsky and Pollin show how the forecasts for a hotter planet strain the imagination: vast stretches of the Earth will become uninhabitable, plagued by extreme weather, drought, rising seas, and crop failure. Arguing against the misplaced fear of economic disaster and unemployment arising from the transition to a green economy, they show how this bogus concern encourages climate denialism. Humanity must stop burning fossil fuels within the next thirty years and do so in a way that improves living standards and opportunities for working people. This is the goal of the Green New Deal and, as the authors make clear, it is entirely feasible. Climate change is an emergency that cannot be ignored. This book shows how it can be overcome both politically and economically.

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#1 NEW YORK TIMES BEST SELLER • In this urgent, authoritative book, Bill Gates sets out a wide-ranging, practical—and accessible—plan for how the world can get to zero greenhouse gas emissions in time to avoid a climate catastrophe. Bill Gates has spent a decade investigating the causes and effects of climate change. With the help of experts in the fields of physics, chemistry, biology, engineering, political science, and finance, he has focused on what must be done

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in order to stop the planet's slide to certain environmental disaster. In this book, he not only explains why we need to work toward net-zero emissions of greenhouse gases, but also details what we need to do to achieve this profoundly important goal. He gives us a clear-eyed description of the challenges we face. Drawing on his understanding of innovation and what it takes to get new ideas into the market, he describes the areas in which technology is already helping to reduce emissions, where and how the current technology can be made to function more effectively, where breakthrough technologies are needed, and who is working on these essential innovations. Finally, he lays out a concrete, practical plan for achieving the goal of zero emissions—suggesting not only policies that governments should adopt, but what we as individuals can do to keep our government, our employers, and ourselves accountable in this crucial enterprise. As Bill Gates makes clear, achieving zero emissions will not be simple or easy to do, but if we follow the plan he sets out here, it is a goal firmly within our reach.

This unique book and DVD is an interactive learning environment composed of seven content areas: building form, envelopes, structures, climate control systems, renewable energy, lighting, and landscape design. Each of these content areas is subdivided into learning modules introducing the subject matter and investigates best practices for

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climate responsive and ecologically sustainable building design and construction. The DVD will help visualize and engage with concepts that may otherwise be too ambiguous or difficult to comprehend in a book format. Key Features: --Interactive format: Takes advantage of the interactive capabilities of state-of-the-art computing technology including hypertext functionality, animations, and open information referencing --Highly visual: Demonstrates building sustainability concepts using well detailed, realistic, 3-D computer generated models and interactive animations --Educational materials serving a variety of learning styles: Combines a traditional textbook format with multimedia graphics and interactive animations, thereby serving both those who learn better through visual media as well as those who prefer reading a textbook --Interdisciplinary nature: Provides a wide range of information for various disciplines engaged in building design and construction including building envelope, mechanical systems, lighting systems, landscape, and energy resources

Passive House in Different Climates introduces the seven Passive House principles, to help you create super-insulated, airtight buildings that require minimal energy use to heat, cool, dehumidify, and ventilate, with superior indoor air quality and year-round comfort. Seventeen case studies in four climate zones---marine, cold and very cold, mixed-dry and hot-dry, and mixed-humid and hot-humid---and in ten countries, show you how to achieve net-zero energy regardless of where you're building or what type of building is required. Includes more than 150 color illustrations.

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This unique volume offers insights from renowned experts in energy efficient building from the world over, providing a multi-faceted overview of the state-of-the-art in energy efficient architecture. It opens by defining what constitutes a sustainable building, suggesting bases for sorely needed benchmarks, then explains the most important techniques and tools available to engineers and architects exploring green building technologies. It covers such pivotal issues as daylighting, LED lighting, integrating renewables such as solar thermal and cooling, retrofitting, LEED and similar certification efforts, passive houses, net-zero and close-zero structures, water recycling, and much more. Highlighting best practices for commercial buildings and private homes, in widely varied climates and within vastly different socio-economic contexts, this illustrated reference will guide architects and engineers in making sustainable choices in building materials and methods. Explains the best methods and materials to support energy efficient building Features case studies by experts from a dozen countries, demonstrating how sustainable architecture can be achieved in varied climates and economies Covers both new constructions and retrofitting of existing structures

Revised and Expanded Edition - Includes CD-ROM with Custom Design Software For the past ten years The Passive Solar House has offered proven techniques for building homes that heat and cool themselves, using readily available materials and methods familiar to all building contractors and many do-it-yourself homeowners. True to this

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innovative, straightforward approach, the new edition of this best-selling guide includes CSOL passive solar design software, making it easier than ever to heat your home with the power of the sun. Since *The Passive Solar House* was first published, passive solar construction expert James Kachadorian has perfected user-friendly, Windows-compatible software to supplement the design process explained in the book by allowing homeowners/designers to enter the specifications of their design and see how changing a variable will affect its energy efficiency. This is the building book for a world of climbing energy costs. Applicable to diverse regions, climates, budgets, and styles of architecture, Kachadorian's techniques translate the essentials of timeless solar design into practical wisdom for today's solar builders. Profiles of successful passive solar design, construction, and retrofit projects from readers of the first edition provide inspiration to first-time homebuilders and renovators alike.

“Green buildings” that slash energy use and carbon emissions are all the rage, but they aren’t enough. The hidden culprit is embodied carbon—the carbon emitted when materials are mined, manufactured, and transported—comprising some ten percent of global emissions. With the built environment doubling by 2030, buildings are a carbon juggernaut threatening to overwhelm the climate. It doesn’t have to be this way. Like never before in history, buildings can become part of the climate solution. With biomimicry and innovation, we can pull huge amounts of carbon out of the atmosphere and lock it up as walls, roofs, foundations, and insulation. We can literally make

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buildings out of the sky with a massive positive impact. The New Carbon Architecture is a paradigm-shifting tour of the innovations in architecture and construction that are making this happen. Office towers built from advanced wood products; affordable, low-carbon concrete alternatives; plastic cleaned from the oceans and turned into building blocks. We can even grow insulation from mycelium. A tour de force by the leaders in the field, The New Carbon Architecture will fire the imagination of architects, engineers, builders, policy makers, and everyone else captivated by the possibility of architecture to heal the climate and produce safer, healthier, and more beautiful buildings. Bruce King, a structural engineer for thirty-five years, is Founder and Director of the Ecological Building Network (EBNet) and author of Buildings of Earth and Straw, Making Better Concrete, and Design of Straw Bale Buildings. He lives in San Rafael, California. The new threshold for green building is not just low energy, it's net-zero energy. In The New Net Zero, sustainable architect Bill Maclay charts the path for designers and builders interested in exploring green design's new-frontier net-zero-energy structures that produce as much energy as they consume and are carbon neutral. In a nation where traditional buildings use roughly 40 percent of the total fossil energy, the interest in net-zero building is growing enormously--among both designers interested in addressing climate change and consumers interested in energy efficiency and long-term savings. Maclay, an award-winning net-zero designer whose buildings have achieved high-performance goals at affordable costs, makes the case for a net-zero

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future; explains net-zero building metrics, integrated design practices, and renewable energy options; and shares his lessons learned on net-zero teambuilding. Designers and builders will find a wealth of state-of-the-art information on such considerations as air, water, and vapor barriers; embodied energy; residential and commercial net-zero standards; monitoring and commissioning; insulation options; costs; and more. The comprehensive overview is accompanied by several case studies, which include institutional buildings, commercial projects, and residences. Both new-building and renovation projects are covered in detail. The New Net Zero is geared toward professionals exploring net-zero design, but also suitable for nonprofessionals seeking ideas and strategies on net-zero options that are beautiful and renewably powered. Good Energy delivers a declaration that renewable energy can be beautiful, affordable, and easy to implement. Jared Green highlights thirty-five case studies from around the world, featuring a wide array of designs and building types that achieve good energy, good design, and excellent cost-efficiency. Single-family homes, townhouses, community spaces, schools, offices, and even power plants demonstrate that relying on solar, wind, and geothermal energy doesn't have to cost more. Each inspiring design harmonizes nature, technology, and democratic space and shows that renewable energy can be appealing and accessible to everyone. An interview with Mark Z. Jacobson, Stanford University professor of civil and environmental engineering and cofounder of the Solutions Project, discusses pathways to 100-percent renewable

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energy around the globe through good design.

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