



Energy Efficient Building A Design Guide

**United States. Congress. House.
Committee on Appropriations.
Subcommittee on Department of the
Interior and Related Agencies**

Energy Efficient Building A Design Guide:

Energy Efficient Building Susan Roaf, Mary Hancock, 1992-10-06 The need to design energy efficient buildings arises from a variety of external pressures legislation emissions of greenhouse and ozone depleting gases public awareness of our pollution of this planet among others Experts in their respective fields contribute articles ranging in scope from issues of basic competence to advanced design enabling designers to obtain insight into the entire gamut of the subject and at the same time provide sufficient back up references for individuals to follow up areas of special interest *Energy Design Guidelines for High Performance Schools* ,2002 *Energy Efficient Building Design* Ana-Maria Dabija, 2020-04-11 This book is the result of recent research that deals with the built environment and innovative materials carried out by specialists working in universities and centers of research in different professional fields architecture engineering physics and in an area that spans from the Mediterranean Sea to the Persian Gulf and from South Eastern Europe to the Middle East This book takes the necessity of re shaping the concept of building design in order to transform buildings from large scale energy consumers to energy savers and producers into consideration The book is organized in two parts theory and case studies For the theoretical part we chose from the wide range of sources that provide energy efficient materials and systems the two that seem to be endless the sun and vegetation Their use in building products represents a tool for specialists in the architectural design concept The case studies presented analyze different architectural programs in different climates from new buildings to rehabilitation approaches and from residential architecture to hospitals and sports arenas each case emphasizes the interdisciplinarity of the building design activity in order to help readers gain a better understanding of the complex approach needed for energy efficient building design *Energy Efficient Buildings* Zhiqiang John Zhai, 2022-08-19 *Energy Efficient Buildings* A complete and authoritative discussion of the fundamentals of designing and engineering energy efficient buildings In *Energy Efficient Buildings Fundamentals of Building Science and Thermal Systems* distinguished engineer and architect Dr John Zhai delivers a comprehensive exploration of the design and engineering fundamentals of energy efficient buildings The book introduces the fundamental knowledge calculations analyses and principles used by designers of energy efficient buildings and addresses all essential elements of the discipline An essential guide for students studying civil architectural mechanical and electrical engineering with a focus on energy building systems and building science the book provides practical in class materials examples and actual design practices as well as end of chapter questions with solutions and sample group projects Readers will find A thorough introduction to the cross disciplinary approach to the design of energy efficient buildings Comprehensive explorations of all critical elements of energy efficient building design including standards and codes psychometrics microclimate thermal comfort indoor air quality HVAC systems and more In depth discussions of the foundational knowledge calculations analysis and principles needed to design energy efficient buildings Practical in class examples and end of chapter questions with solutions for students and design guidance and sample group

projects for use in course lectures and actual design practices Perfect for graduate and advanced undergraduate students studying building environmental systems building systems in construction and mechanical and electrical systems in construction Energy Efficient Buildings Fundamentals of Building Science and Thermal Systems will also earn a place in the libraries of practicing civil architectural and mechanical engineers **Energy Efficient Buildings** Eng Hwa

Yap,2017-01-18 This book discusses energy efficient buildings and the role they play in our efforts to address climate change energy consumption and greenhouse gas emissions by considering buildings and the construction sector s unique position along a critical path to decarbonisation from a multi perspective and holistic viewpoint Topics covered in the book range from daylighting building topology comparison building envelope design zero energy homes in hot arid regions life cycle considerations and energy efficiency analysis to managing energy demand through equipment selection Each chapter addresses an important aspect of energy efficient building and serves as a vital building block towards constructing a timely and relevant body of knowledge in energy efficient buildings *Handbook on Energy Efficiency in Buildings* Asian Development Bank,2024-10-01 As Asia s building sector booms this handbook provides practical tools and guidance to design evaluate and finance energy efficient building projects to help make the sector greener and more resilient Explaining how energy efficient construction can help reduce costs lower emissions and improve affordability the handbook offers practical guidance and tools covers key project cycle stages and delves into sustainable heating and cooling strategies It details ways to improve procurement monitoring and evaluation of energy efficiency measures in the building sector while underscoring the need for governments and the private sector to work together to help transition toward a zero carbon building stock

Energy-Efficient HVAC Design Javad Khazaii,2014-10-17 This book provides readers with essential knowledge enabling the successful design of today s new energy efficient HVAC systems The author introduces important concepts such as Knowledge Categorization Performance Based Design Standards and Quantification of Uncertainty in Energy Modeling for Buildings Pivotal topics that all HVAC and architectural engineers must master in order to navigate the green building renaissance are given focused attention including the role of renewables air quality automatic controls and thermal comfort Relevant ASHRAE standards as well as sustainability scoring systems such as BREEAM HQE LEED and CASBEE are explained in depth Armed with the material contained in this practical reference students and practitioners alike will become more effective and prepared for engineering success **Ecohouse** Susan Roaf,2007-08-31 Now in its 3rd edition the bestselling Ecohouse continues to be both a technical guide and an inspiration for thousands of architects designers and eco builders all over the world As the need to slow climate change becomes increasingly urgent growing numbers of people are looking to dramatically reduce the carbon footprint of their buildings by using more ecologically sound techniques Ecohouse provides design information about the latest low impact materials and technologies showcasing the newest and best green solutions with international case studies demonstrating sustainable design in action around the world This edition has been

expanded to include advice on powering Ecohouses using renewable energy including wind micro hydro and heat pumps and an introduction to low impact building materials such as lime earth and hemp New case studies from across the globe have been added to inspire readers with real life examples of how to make an Ecohouse work Just reading this book won't save the world from the impact of climate change but if everyone from governments down to householders followed its advice we might just begin to turn the tide Additional audience Eco enthusiasts and green self builders will appreciate the handy hints and references on refurbishment and advice on how to kit out their Ecohouse with the greenest appliances and fittings Lecturers and students on sustainable design and construction courses will find the latest real world case studies fascinating and a great source of inspiration for their studio project work

Guideline for sustainable, energy efficient architecture and construction Rückert, Klaus, Shahriari, Effatolsadat, 2014-07-22 Nowadays there is an ever growing awareness regarding inevitable importance of sustainable development and its sub topics such as environment protection ecology resource saving energy efficiency etc Due to massive and rapid development in recent years this topic is getting more crucial in developing countries for instance Iran It is getting more obvious that most of the development activities in absence of precise analysis of current conditions as well as consequences of such activities will lead to devastation of natural resources The resources that is essential for further development of the country Therefore It is necessary to deal with sustainable development and environmental issues from the broader perspective where includes items underlying immediate causes of environmental impact and at the same time tries to improve them Sustainability or sustainable development is an umbrella covering many issues and aspects among them energy which is the key item because energy consumption of buildings could have an impact on environment more than other aspects Considering the huge portion of energy consumption in construction industry and housing sector paying special attention to improvements in this sector is essential Following this goal the aim of this publication is to highlight procedures and practices which promote sustainable construction that is about creating a better quality of building and more healthy places to live in Procedure of sustainable design includes various approaches and methods to develop energy efficient and environmentally sensitive buildings Such approaches and methods demonstrate how to design develop and construct all buildings in general and residential buildings in particular Among various approaches towards sustainability Passive solar strategies are well known thanks to their cost efficiency and context friendliness of its principals and measures The approach of passive design architectural strategies could be considered as the most applicable approach for resource saving and sustainability thinking about special situation of Iran in particular and the Mena region in general Such an approach requires paying special attention to climate social characteristics of current or prospective inhabitants topographical physical characteristics as well as architectural characteristics of the understudied area The relationships and interactions among society building and its architecture and climate is Site specific and dynamic Therefore they should be studied and properly analyzed throughout a specific project process for each certain place The most expecting

outcomes are precise definitions of passive design strategies generally for buildings in MENA Region and especially for Iran. This publication is prepared in the young cities project framework as the reasonable outcome of the developed pilot projects. The book starts with introducing the target group related definitions and a brief overview on a conventional approach and its impact on environment. This chapter ends up with a brief review on benefits of applying sustainable guidelines. As the next step after analyzing the climate and its relationship with thermal comfort and building the main principals of passive solar design are introduced. The selected principles are orientation, day lighting, shading, thermal mass, insulation and ventilation. After a brief introduction of the principals, each one is explained in detail through its general principles and design strategies. Sustainable construction is examined based on its main pillars: construction systems, building elements, ecological building materials and applicable measures for building physics. Construction systems are sorted out in six main groups: block work, brick infill, block work, lightweight block infill, conventional panels, light weight steel frame, tunnel form structural system and precast modular. All selected systems are introduced based on following factors: brief description of the building concept, factory production, insulation, wastage, finishes, labor, installation, transport, lifting services, hydronic cooling, heating and safety. Then main building elements are examined. Here the elements are limited to foundations, walls, floors, roofs, doors and windows. After a short description, different types of each element are introduced. Ecological building materials are investigated in chapter four. To find a base to compare several common criteria are selected such as embodied energy, pollution and waste, local production, reusability and recyclability, durability and interdependency. Applicable measures for building physics are examined in chapter five. The selected main measures are as follows: insulation, glazing, thermal mass, day lighting, shading, ventilation and air tightness. After describing the general principles of each measure, several recommendations in frame of design considerations are provided.

Die enorme Bedeutung nachhaltiger Projekte wie Umweltschutz, ökologischer sparsamer Umgang mit Rohstoffen, Energieeffizienz usw. dringt immer stärker in unser Bewusstsein. Aufgrund der massiven und rasanten Entwicklung in den Schwellenländern z.B. Iran gewinnen Umweltschutz und Nachhaltigkeit immer mehr an Relevanz. Ein einseitiges Wirtschaftswachstum ohne Berücksichtigung ökologischer und klimatischer Bedingungen verursacht die Zerstörung der Umwelt und Rohstoffressourcen, die für die weitere Entwicklung der Länder unverzichtbar sind. Es ist unumgänglich, sich umfassend mit nachhaltiger Entwicklung und ökologischen Aspekten auseinanderzusetzen, die unmittelbaren Auswirkungen auf die Umwelt zu erfassen und gleichzeitig Möglichkeiten einer Optimierung aufzuzeigen. Nachhaltigkeit und Umweltschutz erfassen eine Vielzahl von Themen und Aspekten, u.a. den Energieverbrauch, ein wesentlicher Faktor, da der Energieverbrauch in Gebäuden den größten Einfluss auf die Umweltbilanz hat. In Anbetracht des enormen Energieverbrauchs in Bauwirtschaft und Wohnungsbau ist es unerlässlich, gerade in diesem Bereich eine Optimierung in der weiteren Entwicklung zu verfolgen. Diesem Ziel folgend werden in dieser Publikation Verfahren und Methoden für nachhaltige Bauweisen unter Berücksichtigung einer besseren Bauqualität und gesundheitlicher

Aspekte erläutert Die Maßnahmen nachhaltigen Designs beinhalten verschiedene Ansätze und Methoden energieeffiziente und umweltfreundliche Gebäude zu entwickeln Sie zeigen Entwurf Konstruktion und bauliche Ausführung von Gebäuden im Allgemeinen und Wohngebäuden im speziellen Neben den verschiedenen Ansätzen sind die passive solar strategies die wohl namhaftesten Methoden da diese sehr rentabel und daher für Bauherren attraktiv sind Angesichts der speziellen Situation im Iran im Besonderen und der MENA Region im Allgemeinen könnten die passiven Design Architektur Strategien als eine der am besten anzuwendenden Methoden für Rohstoffeffizienz und Nachhaltigkeit betrachtet werden Dies setzt eine besondere Berücksichtigung des dortigen Klimas der sozialen Charakteristiken derzeitiger oder zukünftiger Einwohner als auch der topographisch physischen und architektonischen Charakteristiken der betroffenen Region voraus Beeinflussung und Beziehungen zwischen Gesellschaft Gebäuden Architektur und Klima sind lokal spezifisch und dynamisch Deshalb sollten diese Faktoren für jeden Standort neu geprüft und analysiert werden Die Resultate dieser Analysen allgemein für Gebäude in der MENA Region und im Besonderen im Iran zeigen deutlich die Überlegenheit von passiven Designstrategien Diese Publikation ist das Resultat der entwickelten Pilotprojekte im Rahmen des Young Cities Projektes Sie beginnt mit der Vorstellung der Zielgruppe relevanten Definitionen und einem kurzen Überblick des konventionellen Ansatzes und dessen Einfluss auf die Umwelt Das Kapitel endet mit einem kurzen Rückblick über den Nutzen nachhaltiger Bauweise Nach Analyse des Klimas und seine Beziehung zu thermischem Komfort und Gebäuden werden die wichtigsten Prinzipien passiver Solarenergie vorgestellt Orientierung Tageslicht Schatten thermale Masse Isolierung und Ventilierung ihre Grundlagen und Designstrategien detailliert erläutert Nachhaltige Konstruktion und deren Hauptpfeiler Bausysteme Bauelemente ökologische Bauelemente und anwendbare Maßnahmen für die Bauphysik werden anschließend beleuchtet Dabei wurden die Konstruktionssysteme in sechs Hauptgruppen gegliedert Ziegeleinflung leichtgewichtige Ziegeleinflung klassische Fliesen leichte leichtgewichtige Stahlrahmen tunnelförmige Struktursysteme und vorgefertigte Modelle Anhand folgender Faktoren werden diese eingehend dargestellt Baukonzepts Fabrikproduktion Isolierung Abnutzung Verarbeitung Arbeitsaufwand Installation Transport Beförderung Services hydronische Kühlung Heizung und Sicherheit Die Hauptbauelemente wie Unterbau Wände Boden Decken Treppen und Fenster werden beschrieben und verschiedene Baureihen dieser vorgestellt Das vierte Kapitel befasst sich mit ökologischen Baumaterialien Um hierbei eine vergleichbare Basis zu finden wurden gemeinsame Kriterien ausgewählt graue Energie Verschmutzung und Abfall lokale Produktion Wiederverwendung und Recycling Nachhaltigkeit und Interdependenzen Im fünften Kapitel werden anwendbare Maßnahmen für die Bauphysik wie Isolierung Lasur Wärmemasse Tageslicht Schatten Ventilation und Luftdichte untersucht deren Grundlagen beschrieben und Empfehlungen bezüglich der Gestaltung präsentiert

Energy Conservation United States. Congress. Joint Economic Committee. Subcommittee on Energy, 1977

Advances in Solar Energy Karl W. Boer, John A. Duffie, 2012-12-06 A number of significant changes have occurred in Advances in Solar Energy since Volume 1 appeared in 1982 The delays in publication

of the second volume are the result of reorganization of the American Solar Energy Society and the negotiation of a new publishing arrangement Beginning with this volume Advances is now published jointly by the Society and Plenum Press The Editorial Board has been enlarged to be more representative of the different fields of solar energy conversion Production of Advances is being expedited through the use of modern word processing equipment and the LEX typesetting editing program We have gone to a single column format to ease the problems of presenting long equations and we expect that the user of the volume will find it easy to read The use of LEX will make last minute updates possible The external appearance of the volume matches that of Volume 1 We expect that future volumes of this annual will be proceeding on schedule We invite comments from users and correspondence from prospective authors of critical reviews Karl W Boer John A Duffie CONTENTS CHAPTER 1 The Measurement of Solar Radiation Ronald Stewart Daniel W Spencer and Richard Perez 1 1 Abstract 1 1 2 Characteristics of Pyranometers 2 1 3 General Features of a Pyranometer 3 1 3 1 Instrument Sensitivity 4 1 3 2 Response with Time 4 1 3 3 Sensitivity 4 1 3 4 Responsivity

European Directory of Sustainable and Energy Efficient Building 1999 John Goulding,2014-05-01 This directory has become a valued source of information for energy efficient building designers and specifiers throughout Europe and the details and scope of product service and supplier listings have again been extensively updated for this edition

Data Center Handbook Hwaiyu Geng,2014-12-01 Provides the fundamentals technologies and best practices in designing constructing and managing mission critical energy efficient data centers Organizations in need of high speed connectivity and nonstop systems operations depend upon data centers for a range of deployment solutions A data center is a facility used to house computer systems and associated components such as telecommunications and storage systems It generally includes multiple power sources redundant data communications connections environmental controls e g air conditioning fire suppression and security devices With contributions from an international list of experts The Data Center Handbook instructs readers to Prepare strategic plan that includes location plan site selection roadmap and capacity planning Design and build green data centers with mission critical and energy efficient infrastructure Apply best practices to reduce energy consumption and carbon emissions Apply IT technologies such as cloud and virtualization Manage data centers in order to sustain operations with minimum costs Prepare and practice disaster recovery and business continuity plan The book imparts essential knowledge needed to implement data center design and construction apply IT technologies and continually improve data center operations

Mechanical and Electrical Equipment for Buildings Walter T. Grondzik,Alison G. Kwok,Benjamin Stein,John S. Reynolds,2011-01-31 For more than half a century this book has been a fixture in architecture and construction firms the world over Twice awarded the AIA s Citation for Excellence in International Architecture Book Publishing Mechanical and Electrical Equipment for Buildings is recognized for its comprehensiveness clarity of presentation and timely coverage of new design trends and technologies Addressing mechanical and electrical systems for buildings of all sizes it provides design guidelines and detailed design procedures for

each topic covered Thoroughly updated to cover the latest technologies new and emerging design trends and relevant codes this latest edition features more than 2 200 illustrations 200 new to this edition and a companion Website with additional resources

Principles of Element Design Peter Rich,Yvonne Dean,2012-10-02 The construction of buildings is learnt through experience and the inheritance of a tradition in forming buildings over several thousand years Successful construction learns from this experience which becomes embodied in principles of application Though materials and techniques change various elements have to perform the same function Principles of Element Design identifies all the relevant elements and then breaks these elements down into all their basic constituents making it possible for students to fully understand the given theory and principles behind each part As all building projects are subject to guidance through the Building Regulations and British Standards this book gives an immediate reference back to relevant information to help practitioners and contractors identify key documents needed Yvonne Dean B A Hons B A Open RIBA an architect energy consultant and materials technologist She also has 15 years experience as a lecturer travels widely and is a guest lecturer at many universities She pioneered an access course for Women into Architecture and Building which has been used as a template by others and has been instrumental in helping to change the teaching of technology for architects and designers Peter Rich AA Dipl Hons Architect started his career with 14 years experience as a qualified architectural technician He then joined the AA School of Architecture working with Bill Allen and John Bickerdike after his graduation later becoming a partner of Bickerdike Allen Rich and Partners He also taught building construction at the Bartlett School of Architecture University College London and architectural design at the Polytechnic of North London He now acts as a Consultant

A Handbook of Sustainable Building Design and Engineering Dejan Mumovic,Mat Santamouris,2018-10-30 The second edition of this authoritative textbook equips students with the tools they will need to tackle the challenges of sustainable building design and engineering The book looks at how to design engineer and monitor energy efficient buildings how to adapt buildings to climate change and how to make buildings healthy comfortable and secure New material for this edition includes sections on environmental masterplanning renewable technologies retrofitting passive house design thermal comfort and indoor air quality With chapters and case studies from a range of international interdisciplinary authors the book is essential reading for students and professionals in building engineering environmental design construction and architecture

Comparison of energy efficient and green buildings Shrestha, Shritu,2016-04-18 The adverse environmental impacts from inefficient building construction increase if measures to reduce energy and resource use through stringent building policies and efficient technology are not implemented in developed and developing countries To illustrate a holistic approach to reducing buildings energy and resources the comparison of energy efficient and green buildings in terms of their technological aspects and their policy context in developed and developing countries mainly in Europe the USA and India is presented together with a policy package recommendation for Nepal A quality review of multiple literature sources

supported by various expert opinions were the methods used for this in depth analysis. It discusses that mandatory building standards, voluntary labels, information instruments and financial incentives are the most effective combination for the shift towards market transformation that results in a higher share of energy efficient and green buildings. The lesson such as higher compliance with and enforcement of building energy standards can be seen in developed countries e.g. Germany. Looking at a building's life cycle perspective it is not sufficient to focus solely on operational energy reduction in higher energy efficient buildings as this is achieved by the increased use of energy intensive materials. Green requirements must be considered in updating building energy standards and labels particularly for developed countries. Green building certification will also become more effective when the stringency of energy standards is higher and when the whole building life cycle assessment is considered. Due to the increasing scarcity of energy and resources many developing countries are forced to face up to the need for holistic green buildings. Although baseline standards are not as high as in most developed countries and national financial support is low the gradual move towards making the standards more stringent and incorporating the wider scope of resource saving are positive developments in developing countries e.g. India. However to achieve significant success strategies must include the establishment of a suitable funding environment, a political commitment and a strong government vision for long term and sustainable building construction. The challenges faced by Nepal are even greater due to the fast pace of urban growth and the absence of energy and resource efficient buildings policies highlighting the need for an effective policy package. Overall this dissertation demonstrates how energy efficient and green buildings are interlinked. Green buildings reinforced with higher levels of energy efficiency and energy efficient buildings incorporating green requirements are stepping stones for achieving greater building energy and resource efficiencies. And a suitable policy package fosters its development. Nachteilige Umweltwirkungen eines ineffizienten Bausektors nehmen zu wenn Maßnahmen zur Reduktion des Energie und Ressourcenbedarfs in Form stringenter Gebäudepolitiken und effizienter Technologie in Industrieländer und Entwicklungsländer nicht umgesetzt werden. Um einen ganzheitlichen Ansatz zur Reduktion des Energie und Ressourcenbedarfs von Gebäuden abzubilden werden energieeffiziente und grüne Gebäude hinsichtlich technologischer Aspekte und ihres Politikkontextes in Industrie und Entwicklungsländern verglichen. Die Analysen beziehen sich hauptsächlich auf Europa, die USA und Indien und werden ergänzt um Empfehlungen für ein Maßnahmenpaket für Nepal. Ein Review unterschiedlicher Literaturquellen unterstützt durch diverse Expertenmeinungen stellt die methodische Grundlage für diese detaillierte Analyse dar. Es diskutiert dass Bauvorschriften und standards, freiwillige Label, Informationsinstrumente und finanzielle Anreize bilden die effektivste Kombination für die Einleitung einer Markttransformation die schließlich zu einem höheren Anteil energieeffizienter und grüner Gebäude führt. Gute Beispiele einer höheren Beachtung von Gebäudeenergiestandards und deren Weiterentwicklung existieren in verschiedenen Industrieländern wie Deutschland. Unter Berücksichtigung des Lebenszyklus von Gebäuden ist es nicht ausreichend nur die Reduktion des Energieverbrauchs in der

Nutzungsphase der Gebäude zu beachten weil diese den Einsatz von Materialien mit hohem Energieverbrauch in der Herstellung bedeuten kann. Größere Anforderungen müssen in der zukünftigen Entwicklung von Gebäudeenergiestandards und Labels berücksichtigt werden insbesondere in Industrieländern. Die Zertifizierung grüner Gebäude wird auch effektiver werden wenn Energiestandards verschärft werden und wenn vollständige Gebäudekobilanzen berücksichtigt werden. Aufgrund steigender Knappheit von Energie und Ressourcen sind viele Entwicklungsländer gezwungen sich der Notwendigkeit grüner Gebäude zu stellen. Obwohl das Niveau von Mindeststandards unterhalb dessen der meisten entwickelten Ländern liegt und die finanzielle Unterstützung gering ist sind die schrittweise Verschärfung der Standards und die Einbeziehung der weiteren Perspektive der Ressourcenschonung positive Entwicklungen in Entwicklungsländern wie Indien. Um erfolgreich zu sein müssen bestehende Strategien umfasst werden an die Schaffung eines geeigneten Rahmens die politische Bekenntnis und eine starke Regierungsvision für einen langfristigen und nachhaltigen Bausektor. Die Herausforderungen mit denen Nepal konfrontiert wird sind noch umfangreicher. Sie resultieren aus einem schnellen urbanen Wachstum und dem Fehlen von energie- und ressourceneffizienten Gebäudepolitiken. Die Erforderlichkeit eines effektiven Maßnahmenpakets für Nepal wird hierdurch unterstrichen. Insgesamt wird hierdurch der Zusammenhang zwischen energieeffizienten und grünen Gebäuden aufgezeigt. Die verstärkte Berücksichtigung von Energieeffizienz in grünen Gebäuden sowie von Nachhaltigkeitsanforderungen in energieeffizienten Gebäude sind Sprungbretter für die verbesserte Energie- und Ressourceneffizienz von Gebäuden. Eine solche Entwicklung wird durch ein geeignetes Maßnahmenpaket unterstützt.

A Handbook on Low-Energy Buildings and District-Energy Systems L.D. Danny Harvey, 2012-08-21 Winner of Choice Magazine Outstanding Academic Titles for 2007 Buildings account for over one third of global energy use and associated greenhouse gas emissions worldwide. Reducing energy use by buildings is therefore an essential part of any strategy to reduce greenhouse gas emissions and thereby lessen the likelihood of potentially catastrophic climate change. Bringing together a wealth of hard to obtain information on energy use and energy efficiency in buildings at a level which can be easily digested and applied. Danny Harvey offers a comprehensive objective and critical sourcebook on low energy buildings. Topics covered include thermal envelopes heating cooling heat pumps HVAC systems hot water lighting solar energy appliances and office equipment embodied energy buildings as systems and community integrated energy systems cogeneration district heating and district cooling. The book includes exemplary buildings and techniques from North America Europe and Asia and combines a broad holistic perspective with technical detail in an accessible and insightful manner.

Department of the Interior and Related Agencies Appropriations for 1998: Public witness for natural resource programs... Public witnesses for energy and other programs United States. Congress. House. Committee on Appropriations. Subcommittee on Department of the Interior and Related Agencies, 1997

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Energy Efficient Building A Design Guide Introduction

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