

# The Allocation and Analysis of Available Energy for Various Buildings from the Perspective of Urban Planning

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## Abstract

Urban planning and design must take the protection of the ecological environment as the first principle and carry out the planning and design of an ecological city on the basis of respecting nature and environment. Ensure that the quality of the city's ecological environment is maintained to a certain extent, reduce the construction of pollution-related projects from the perspective of municipal engineering, plan with on-site investigations by high-level eco-city design staff and closely cooperate with the design of ecological nature and urban development. The layout promotes the construction and development of ecological cities. In urban construction, it is necessary to handle the relationship between energy and the environment, prevent the occurrence of environmental governance after development, strengthen environmental management and the effective use of energy, respond to strict environmental management and carry out energy development and development through advanced technologies and processes. Use and protect the environment at the same time, continue to innovate in science and technology, develop new technologies and equipment and eliminate the production of pollution-intensive and energy-intensive products, so as to achieve the goals of energy conservation and environmental protection.

**Keywords:** Urban Planning, Building, Available Energy;

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## 1. Introduction

In my country's energy structure, coal still occupies an important position. Compared with natural gas and oil, coal energy resources are very rich and there are various types of coal. Therefore, in the process of developing clean energy, the focus is on coal energy. Through research, it has gradually emerged that coal is used as a raw material and with the direct or indirect conversion and treatment technology of coal, energy types such as liquid fuel and heat for engines have been developed, which effectively improves the cleanliness of coal energy<sup>[1, 2]</sup>. In addition, energy resources such as natural gas, oil and coal are located in different regions and environments. In order to effectively play their role, the state has invested a lot of energy and funds in the

construction of related projects, such as the West-East Gas Pipeline, etc. Although it cannot effectively improve my country's energy utilization problems in a short period of time, it has a good sustainability in the long-term development. Since coal is still the main energy source used in our country at this stage, it is also necessary to use coal as the mainstay to develop new energy sources to optimize the energy structure.

## 2. Urban planning perspective

### 2.1. City functions

In the definition of urban planning, the traditional definition is to plan urban development and construction in the following two aspects, one is urban space and the other is land use, which

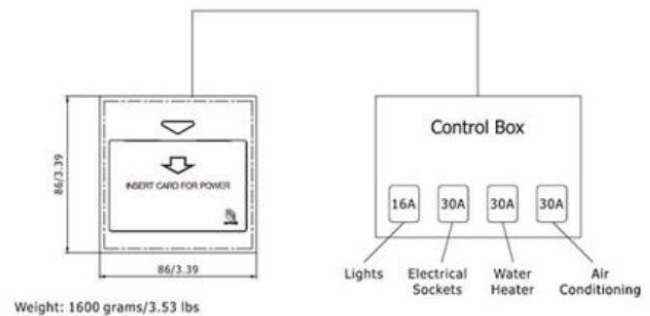
embodies narrowness. From the perspective of public management<sup>[3]</sup>, cities have planning functions, which are reflected in the following aspects: (1) To meet the spiritual and material needs of urban residents and to ensure the sustainable development of the city.

In urban planning, clear goals and tasks need to be established and when the goals are determined, specific measures need to be drawn up in order to point the way for the development of the city. At the same time, the formulation of planning measures provides standards for urban construction.

When specific measures are formulated, it is necessary to consider whether they comply with legal norms and then implement them on this basis. (2) When all planning measures are completed, it is necessary to enter the review process and the development plan must be approved by the relevant departments.

Among all the functions of urban planning, the planning function is the most important function, which plays a leading role in the future development of the city. From the perspective of public management, organizational functions are composed of the following aspects: organizational operation mechanism, urban planning organization and organizational management system. At present, the power of public management has been greatly improved.

In the urban planning organization, in addition to the city administrative department, it has also joined the power of the people and many construction investment entities have also become a member of the planning organization. As for the operational mechanism of management planning, my country's market regulation mechanism still has certain problems. In some places, bureaucracy is serious<sup>[4, 5]</sup>. Therefore, urban planning decisions are unreasonable. In addition, there are problems in organization and management, which will also affect the better development of urban planning. Therefore, the organizational functions of urban planning need to be improved. The city energy system is in the figure below<sup>[6]</sup>.



**Figure 1.** City energy system.

## 2.2. Ecological management

In the ecological planning and design, we must follow the principle of holism, combine economic benefits, social benefits and environmental benefits and coordinate the relationship between them and it can be done in two ways: one is to do Good coordination between the whole and the part. Investigate and analyze various factors in urban construction and then make overall plans for these factors to ensure that the economic benefits of urban construction are improved on the basis of the quality of the ecological environment. Second, it is necessary to coordinate the relationship between environmental quality and urban development and use scientific and effective means to continuously improve the environmental quality of the city so as to make the city sustainable.

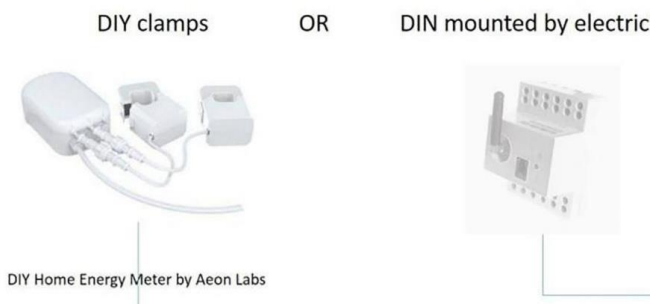
A lot of energy and resources need to be consumed in urban construction and our country's energy and resources are limited. Most of the energy and resources are not renewable, so use some less. If too much is consumed, its future development Caused a serious impact<sup>[1]</sup>. Therefore, in the process of using energy, we must follow the principle of sustainable development and we must save energy.

For this reason, urban planners should pay attention to the utilization of resources and energy when planning and improve the utilization rate of energy resources. If part of the non-renewable energy and resources can be replaced by other energy sources, they should be used to reduce non-renewable energy and resources. Usage rate. At the same time, the use of energy and resources should be cyclical and there

should be no waste. In urban planning, scientific and reasonable measures should be used to increase the utilization rate of energy resources and achieve energy conservation and sustainability in urban ecological planning.

The various elements of the ecosystem are closely linked and these elements can achieve mutual benefit and coexistence. The ecosystem has multiple components, these components are symbiotic and there are connections between them, but these same components are relatively independent.

In urban planning and design, urban planners must clarify the relationship between these components. Coordinate each part and at the same time do a good job in the planning and design of each part, so as to help each other and then achieve the overall development goals. The city energy management system is in the figure below.



**Figure 2.** City energy management system.

### 3. Analysis of building available energy

#### 3.1. Low-carbon energy use planning

At present, the sustainable development strategy has received full attention from the whole society. Not only energy resources are saved, but the urban ecological environment can also be protected<sup>[2]</sup>. Phase out high-polluting materials and energy, make full use of recyclable materials, try not to use disposable items, etc.; fully realize the value of low-carbon life, low-carbon energy will not release a large number of harmful substances, which is important for the planning and construction of ecological cities. It is of great help, for example, through activities such as advocating tree planting and saving electricity for one hour to increase the

promotion of eco-city. The city energy planning system is in the figure below.



**Figure 3.** City energy planning system.

#### 3.2. Green transportation planning

In the process of ecological city planning and construction, it is necessary to scientifically plan the transportation system based on the development requirements of the ecological city and construct a more environmentally friendly transportation plan, which will effectively promote the overall development of the transportation industry<sup>[3]</sup>.

Vigorously promote green travel, encourage people to use public transportation, walking and other environmentally friendly travel modes as the first choice for transportation, so as to minimize the harm to the environment. Vigorously develop public transportation, widely publicize the advantages of green travel and enhance people's green travel concept.

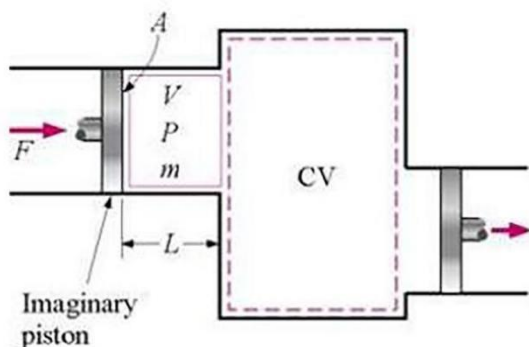
Taking environmentally friendly vehicles as the first choice and actively advocating the installation of exhaust filters to reduce polluting gas emissions. The city green transportation system is in the figure below.



**Figure 4.** City green transportation system.

### 3.3. Full integration of natural environment and urban construction

First of all, in the process of planning and designing an ecological city, we must actively protect the local ecological environment. Buildings should be designed based on natural geographic conditions to avoid damage to the natural environment. Secondly, in the process of ecological city construction, it is necessary to reasonably set up natural isolation belts, construct urban landscapes through natural vegetation and effectively improve the urban environment. Finally, in the planning and design practice, we must proceed from the long-term and overall situation, reasonably divide the ecological function zones and fully incorporate all aspects of urban life into the ecological city system. The city energy system is in the figure below.



**Figure 5.** Energy system.

## 4. Optimal allocation of energy

### 4.1. Energy conversion and storage technology

In view of the requirements of the construction of the urban energy Internet, the original single

function mode can be transformed into a combination of centralized and distributed functions to meet the needs of internal and external energy conversion and supply. At the same time, ground-source heat pumps, fans and other technical equipment can be used to implement repeated conversion of energy to reduce energy loss during transportation<sup>[4]</sup>. In terms of energy storage, technologies such as fuel cells or thermal storage tanks can be used to ensure the safety of energy storage and recall on the one hand and on the other hand to increase the control of the energy transmission process to maintain urban safety. The city energy storage system is in the figure below.



**Figure 6.** City energy storage system.

### 4.2. Data acquisition and monitoring control technology

Data acquisition and monitoring control technology is referred to as SCADA, which is used in many fields such as electric power, oil and natural gas. Applying it to the urban IES can comprehensively collect and process the energy data involved in the city and provide a reliable basis for integrated services. Compared with the traditional centralized energy system, the application of this technology has reduced the scale of the urban energy Internet. Although the complexity of the structural system has increased, the safety and control efficiency have not been affected in any way and the energy transmission has been strengthened. safety<sup>[5]</sup>. The integrated supply of urban energy must not only meet the grid security constraints such as node voltage amplitude, branch power flow and the IV-1 principle, but also meet the heat and gas network



security constraints such as node pressure and pipeline flow. Relying on electricity, heat, gas and other multi-energy flow safety control technologies, it provides urban users with safe and stable multiple energy sources.

#### 4.3. Big data and artificial intelligence technology

Big data technology helps in-depth exploration of the needs of urban users, combined with data content to optimize and innovate the urban integrated service model, which can create greater economic benefits on the basis of improving service quality and meeting the requirements of urban users. At the same time, through the application of big data technology, the service model has also been further updated. Artificial intelligence technology is a measure that uses intelligent robots to improve the city's comprehensive service level. The application of this technology can realize the identification and control of industrial and commercial production and operation and residents' behavior through machine perception, learning and intelligent behavior services, real-time supervision and diagnosis of operating equipment and corresponding maintenance operations to reduce cost losses. Promote the normal operation of equipment<sup>[6]</sup>.

### 5. Conclusion

If a modern city wants to continue to develop, it must change the status quo, strive to build an ecological city, coordinate the relationship between the city and the natural environment and realize the symbiosis between mankind and nature. Driven by this kind of ideology, the concept of ecological city planning came into being. In addition to traditional urban architectural planning, people have added more ecological design when planning urban planning and the city is truly carried out from a natural perspective. Construction, changes in all aspects of people's production and life and finally builds a green, ecological and livable city that can develop the economy. This is also the result of urban and social progress.

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