Delta University for Science and Technology
Office of the Vice President for Community Service
and Environmental Development

The Strategic Plan for Energy Conservation and Efficiency Improvement at Delta University for Science and Technology

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Content Structure:

- **Introduction:** Covers the importance of utilizing solar energy and enhancing energy efficiency at the university.
- **Strategic Goals of the Plan:** Highlights key objectives related to sustainability and energy conservation.
- **Timeline for Implementation:** Specifies the timeline for short, mid, and long-term measures.
- **Short-term Plans (2-3 months):** Includes awareness campaigns, activating penalties, and reviewing current devices.
- **Mid-term Plans (12-18 months):** Focuses on installing solar systems and replacing inefficient devices.
- **Long-term Plans (1.5-5 years):** Emphasizes standards for new buildings and expanding solar energy usage.
- **Reference to Local and International Laws and Standards:** Explains how the plan is based on local and international legislation.
- **Implementation Procedures:** Details steps to be implemented within the university.
- **References and Sources:** Lists the laws and references used in drafting the plan.

Introduction

The energy crisis is one of the biggest challenges facing the world today, as increasing consumption and the rising cost of conventional fuels have put considerable strain on the economy and natural resources. In light of this reality, the importance of adopting sustainable strategies to improve energy efficiency and conservation is evident, with a strong emphasis on renewable energy sources such as solar power. These efforts align with both global and local directives aimed at reducing carbon emissions and achieving sustainable development. Educational institutions, in particular, have the potential to significantly contribute to these efforts.

Delta University for Science and Technology, a leading educational institution in Egypt, recognizes its vital role in advancing sustainable development goals. Over the years, the university has contributed to numerous initiatives and projects focused on improving infrastructure, enhancing education, and supporting scientific research that benefits society and the economy. Through its engagement with the academic and research communities both locally and internationally, the university strives to promote innovation and technological advancement.

In line with Egypt's Vision 2030 and the Sustainable Development Goals (SDGs), this strategic plan aims to enhance energy efficiency at Delta University, with a focus on utilizing solar energy as an alternative and effective solution. The university aims to balance improved energy efficiency with reduced environmental impacts by integrating solar energy across its buildings and essential facilities.

Contributions of Delta University:

- **Supporting Scientific Research:** The university funds and supports research focused on improving energy consumption and developing renewable energy technologies, enhancing innovation opportunities in this field.

- **Community Engagement:** The university actively contributes to the community by raising awareness about the importance of energy conservation through seminars, workshops, and awareness campaigns.
- **International Partnerships:** The university collaborates with global institutions and universities on research projects and practical applications aimed at developing sustainable energy solutions, solidifying its position as a leader in this field.
- **Environmental Projects:** The university implements various environmental projects aimed at reducing carbon emissions and increasing reliance on renewable energy sources, including solar energy.

Through this strategic plan, Delta University seeks to implement effective measures across multiple levels, including short, medium, and long-term plans. This plan is based on international and local guidelines related to energy efficiency improvement and renewable energy use.

The university aims to set an example in sustainable energy within educational institutions in Egypt and the region by adopting environmentally friendly practices and enhancing efficient energy usage.

Strategic Goals of the Plan

The energy efficiency and conservation plan at Delta University for Science and Technology seeks to achieve a set of strategic goals that align with the Egyptian state's directives and sustainable development plans at both the local and international levels. These goals reflect the university's commitment to promoting sustainability and innovation in the energy sector, with a focus on reducing consumption, increasing reliance on renewable energy sources, and improving energy efficiency across all university facilities. The main strategic goals are as follows:

1. **Improving Energy Efficiency Across University Facilities**

This goal involves implementing techniques and procedures aimed at significantly reducing electricity consumption within university buildings. This includes optimizing the performance of electrical equipment used in the university, such as air conditioning, heating, and lighting systems, and upgrading these systems to be more energy-efficient. Additionally, real-time monitoring and analysis systems for energy consumption will be adopted to enable more accurate and effective decision-making regarding energy usage.

2. **Relying on Renewable Energy as the Primary Energy Source**

This goal focuses on enhancing the use of solar energy as a primary source of electricity at the university. The university will install solar panels on the rooftops of buildings and university facilities, reducing dependence on the national electricity grid, alleviating electrical loads, and lowering electricity costs. Furthermore, the university aims to present successful models for renewable energy applications in educational institutions, which could promote broader adoption within Egyptian society.

- **Enhancing Environmental Awareness Among University Members**

This goal focuses on promoting a culture of conservation and sustainability among students, faculty members, and university staff. Through comprehensive awareness campaigns and targeted educational programs, the university aims to foster responsible behaviors toward energy consumption and offer specialized courses and workshops to increase awareness about the importance of renewable energy and its positive impact on the environment and economy.

- **Achieving Environmental Sustainability and Reducing Carbon Emissions**

Through this plan, the university aims to reduce carbon emissions resulting from traditional energy consumption. This will be achieved by increasing reliance on clean and energy-efficient solar energy and implementing initiatives to improve energy

efficiency in all academic and administrative activities. This goal aligns with Egypt's international commitments to achieve the sustainable development goals and mitigate the negative impacts of climate change.

- **Providing a Model for Educational Institutions in Sustainable Energy**

Delta University aims to serve as a role model for other universities and educational institutions in Egypt by implementing this strategic plan. Through measures taken to improve energy efficiency and utilize solar energy, the university aims to present a practical model that can be adopted by educational institutions nationwide. The university will also seek to document its successful experiences and share them in local and international conferences and forums to enhance cooperation and disseminate knowledge in this field.

- **Supporting Scientific Research and Technological Development in Sustainable Energy**

Supporting scientific research and technological development is an essential part of the university's objectives in this context. The university aims to stimulate research focused on developing new and effective renewable energy technologies and improving energy efficiency. This research will contribute to finding innovative solutions to the energy challenges faced by the university and society at large.

- **Compliance with Local and International Energy Standards and Laws**

The university is committed to implementing all local and international energy conservation and renewable energy usage regulations and standards. It will also work to update the infrastructure of university buildings to comply with Egyptian energy efficiency codes, while keeping pace with global trends in this field.

Time frame for implementing the strategic plan for energy conservation at the university

First: Short-Term Plans (2-3 months)

- **Comprehensive Awareness Campaigns**:
  - Launch awareness campaigns on the importance of energy conservation, referencing Law No. 87 of 2015 on the regulation of electricity services and consumer protection, which encourages energy conservation and efficiency.
  - Include awareness sessions in faculty councils, such as the Education and Student Affairs Council and the Graduate Studies and Research Council, to raise awareness among students and faculty members.
- **Activation of Penalties**:
  - Based on international standards such as ISO 50001, which emphasizes the need for adherence to energy conservation measures, administrative penalties will be applied to those who violate energy-saving procedures.
- **Review of Current Equipment**:
  - Conduct a comprehensive survey of all electrical equipment at the university to identify the most energy-consuming devices and replace them with energy-saving alternatives, in line with the directives of the Supreme Energy Council and the executive regulations of the Electricity Law.

Second: Medium-Term Plans (12-18 months)

- **Installation of Solar Energy Systems**:
  - In collaboration with the Arab Organization for Industrialization and Benha Electronics Company, solar power stations will be installed on rooftops of university buildings with high electricity consumption.
  - Adherence to the Egyptian Code for Improving Energy Efficiency in Buildings to ensure the effectiveness of solar energy usage.
- **Replacement of Inefficient Equipment**:
  - In alignment with the 2015 Paris Climate Agreement, which aims to reduce carbon emissions, replace low-efficiency devices with energy-efficient ones across all laboratories and offices.
  - Prohibit the purchase of equipment with an energy efficiency rating below "C" according to the classifications of the Egyptian Ministry of Electricity and Renewable Energy.
- **Governance and Monitoring Activation**:
  - Form a permanent committee within the university to monitor the implementation of energy efficiency strategies, in collaboration with the Supreme Council of Universities and the Energy Efficiency Unit at the Cabinet to ensure the university's alignment with government policies.

Third: Long-Term Plans (1.5-5 years)

- **Application of Energy Standards in New Buildings**:
  - Construct all new university buildings following the Egyptian Code for Energy Efficiency, with a gradual transition of older buildings to comply with these standards.
  - Engage experts from the United Nations Environment Programme (UNEP) in designing environmentally-friendly buildings.
- **Expansion of Solar Energy Usage**:
  - Expand solar power stations to cover all high-consumption buildings, in alignment with the 2030 Agenda for Sustainable Development and Sustainable Development Goal 7 (Clean and Renewable Energy).
- **Incorporation of Energy Conservation Topics in Curricula**:
  - In collaboration with the Supreme Council of Universities, integrate energy efficiency concepts into the curricula of scientific and engineering colleges to enhance students' awareness of the importance of energy conservation.

Referencing Local and International Laws and Standards:

1. **Law No. 87 of 2015** on the regulation of electricity services, which outlines the foundations for improving energy efficiency.
2. **The Egyptian Code for Improving Energy Efficiency**, which regulates standards for constructing environmentally-friendly and sustainable buildings.

3. **The 2015 Paris Climate Agreement**, which urges countries to reduce emissions and adopt renewable energy strategies.
4. **ISO 50001**, which provides a framework for establishing an energy management system through continuous commitment to energy efficiency improvement.
5. **United Nations Environment Programme (UNEP)**, which promotes the use of renewable energy sources and offers guidelines for designing sustainable buildings.

Implementation Steps:

1. Set air conditioning units to 26°C, with 10% of units turned off during peak hours.
2. Replace all incandescent bulbs with energy-saving LED lights in offices and hallways.
3. Install solar power stations on main building rooftops in collaboration with relevant authorities.
4. Implement an energy consumption monitoring system using light sensors in hallways and public areas.
5. Prohibit the purchase of non-energy-efficient devices in university tenders, with the university committing to energy efficiency standards.

References and Sources:

1. **Egyptian Energy Laws**
    - Egyptian Electricity Law No. 87 of 2015.
    - Executive Regulations for Renewable Energy Law No. 203 of 2014.
    - Egyptian Energy Efficiency Guide from the Electricity Utility and Consumer Protection Regulatory Agency.
2. **International Agreements and Treaties**
    - United Nations Framework Convention on Climate Change (UNFCCC).
    - 2015 Paris Agreement on Climate Change.
    - United Nations Sustainable Development Goals (SDGs) - Goal 7: "Affordable and Clean Energy."
3. **Academic Literature and International Reports**
    - International Renewable Energy Agency (IRENA) report on energy efficiency and solar energy use.
    - World Bank publications on sustainable energy in educational institutions.
    - Local studies and reports on solar energy use in Egypt.
4. **Delta University for Science and Technology Sources**
    - Minutes from Delta University faculty council meetings on energy conservation topics.
    - Internal reports from Delta University on energy consumption and renewable energy technology implementation.
    - The university's plans aligned with national sustainability and renewable energy trends.

Summary of Delta University Strategic Plan for Energy Efficiency and Conservation

Delta University for Science and Technology's energy efficiency and conservation plan seeks to revolutionize the university's energy use across its facilities. Energy issues pose significant challenges for both developing and developed countries. With rising electricity production costs and increased fuel consumption, the need for energy conservation and alternative sources like solar energy has become pressing. Delta University aims to be a model for energy conservation and renewable energy reliance, minimizing environmental and economic impacts and balancing energy efficiency with the well-being of the university community.

Strategic Goals The plan aims to improve energy efficiency in university facilities, increase reliance on renewable energy, and enhance environmental awareness among the university community. Additionally, it seeks environmental sustainability, carbon emission reductions, and to serve as a sustainable energy model for other educational institutions. The plan also prioritizes supporting scientific research in sustainable energy, along with compliance with local and international energy laws and standards.

Implementation Plans The plan comprises short, medium, and long-term initiatives, beginning with awareness campaigns within the university to shift energy consumption behavior and including the replacement of less efficient electrical equipment with modern, energy-saving systems. In the medium term, the university aims to install solar power stations on rooftops of key buildings such as hospitals and labs. In the long term,

all new buildings will adhere to Egyptian energy codes, and older buildings will gradually be retrofitted to meet energy efficiency standards.

Execution Steps Execution steps include replacing existing lighting with energy-efficient systems like LED bulbs and installing solar-powered water heaters in hospitals and student residences. The plan also involves smart monitoring systems to manage energy consumption, such as motion sensors in corridors and offices to operate lighting only when needed. The university will also reduce energy use during peak hours by regulating the use of air conditioning and lighting.

Future Vision This plan represents a comprehensive vision to create a real transformation in energy consumption practices at Delta University. By implementing these actions, the university aims to reduce operating costs, realize tangible environmental and economic benefits, and contribute to sustainable development goals that Egypt is committed to under its Vision 2030 objectives. Additionally, the university will document successful practices and present them at academic and international conferences.

Conclusion Delta University's plan for energy efficiency and conservation reflects its commitment to adopting the best global and local practices in energy sustainability. Implementing this plan marks a significant step towards optimizing resource usage and contributing to national and international sustainable development, thereby enhancing the university's standing as a leading institution in this field.