An- Najah National University

Energy Efficiency Plan

An-Najah National University is committed to reducing its overall energy consumption and minimizing its environmental footprint. As part of its sustainability efforts, the university has implemented several measures and processes to improve energy efficiency and support climate action. This report outlines the key initiatives and strategies the university has undertaken, including the development of a climate action plan, regular energy consumption reporting, future energy reduction plans, and the application of the Palestine Green Building Guideline (2024) in all new construction and renovations.

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1. Climate Action Plan

In alignment with global sustainability goals, An-Najah National University has developed a comprehensive **Climate Action Plan**. This plan is designed to reduce the university's carbon footprint by implementing energy-efficient practices across all campuses. The Climate Action Plan focuses on several key areas:

- **Energy Consumption Reduction**: Establishing targets to decrease energy use in buildings and facilities by adopting advanced energy-saving technologies.
- **Renewable Energy Integration**: Investing in renewable energy sources, such as solar panels, to supplement the university's energy needs and reduce reliance on non-renewable energy.

- **Sustainable Transportation**: Promoting sustainable transportation options for students and staff to lower greenhouse gas emissions.
- **Engagement and Education**: Raising awareness and encouraging students, staff, and the wider community to participate in climate action through educational programs and campus-wide events.

2. Renewable Energy Sources

An-Najah National University is committed to integrating renewable energy sources as part of its sustainability initiatives to reduce dependence on non-renewable energy and lower its carbon footprint. The university has implemented several renewable energy projects, which contribute significantly to its energy needs. Such as:

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<tr><td>Solar Water Heating System, Faculty of Sports</td><td>Rooftop solar PV power plant, Faculty of Medicine</td></tr>
<tr><td>  </td><td>  </td></tr>
<tr><td>Rooftop solar PV power plant, Faculty of Engineering</td><td>PV System, Faculty of Agriculture</td></tr>
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Hybrid photovoltaic system, An-Najah Hospital

Rooftop solar PV power plant, Faculty of Humanities

Rooftop solar PV power plant, Faculty of Literature

Solar Power Tree

Solar Photovoltaic Carport system

80 kWp Rooftop Solar Photovoltaic System at the Faculty of Agriculture and Veterinary Medicine building

50 kWp Solar PV system for water pumping in the University Farm

Description:

- The combined cooling, heating and power (CCHP) unit on the roof of the Sport Complex - swimming pool, a solar water heating system is installed with a capacity of 481800 kWh/year.
- On roofs of Faculty of Medicine and Health Sciences, Engineering and Information Technology, Agriculture and Veterinary Medicine, Educational Sciences and Teachers Training, Humanities, Arts and An-Najah University Hospital, solar PV power system is installed with a capacity of 1.5MW.
- Total renewable energy produce inside university campuses in 2022 is $\mathbf{2,660,350}$ kWh/year.

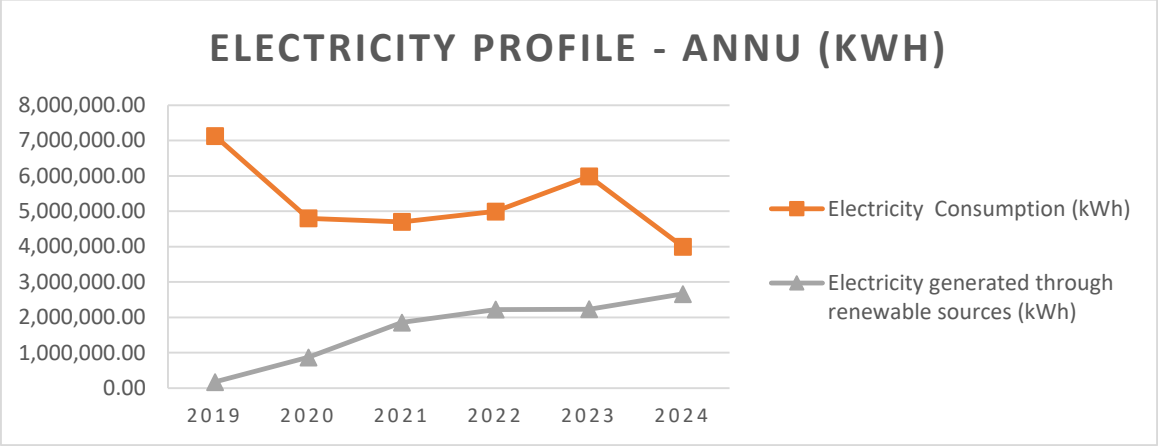
More Description:

1. On the roof of the Sport Complex, a solar water heating system is installed with a capacity of 1320 kWh/day, for producing hot water preheat of the swimming pool.
2. On roofs of Faculty of Medicine and Health Sciences, solar PV power system with capacity of 41 kWp is installed.
3. On roofs of Faculty of Engineering and Information Technology, solar PV power system with capacity of 75 kWp is installed.
4. Grid-tied hybrid photovoltaic system at An-Najah University Hospital in Nablus with capacity of 110 kWp is installed.
5. Grid-tied solar PV power system in the land of the Faculty of Agriculture and Veterinary Medicine with capacity of 1000 kWp is installed.
6. On roofs of Faculty of Educational Sciences and Teachers Training, solar PV power system with capacity of 62 kWp is installed.
7. On roofs of Faculty of Humanities, solar PV power system with capacity of 105 kWp is installed.
8. Solar Photovoltaic Carport system: Faculty of Art South Car Park - New Campus, with a capacity of: 50 kWp, under implementation.
9. Solar Power Tree – new campus with a capacity of 3.2 kWp under implementation.
10. 80 kWp Rooftop Solar Photovoltaic System at the Faculty of Agriculture and Veterinary Medicine building
11. 50 kWp Solar PV system for water pumping in the University Farm.

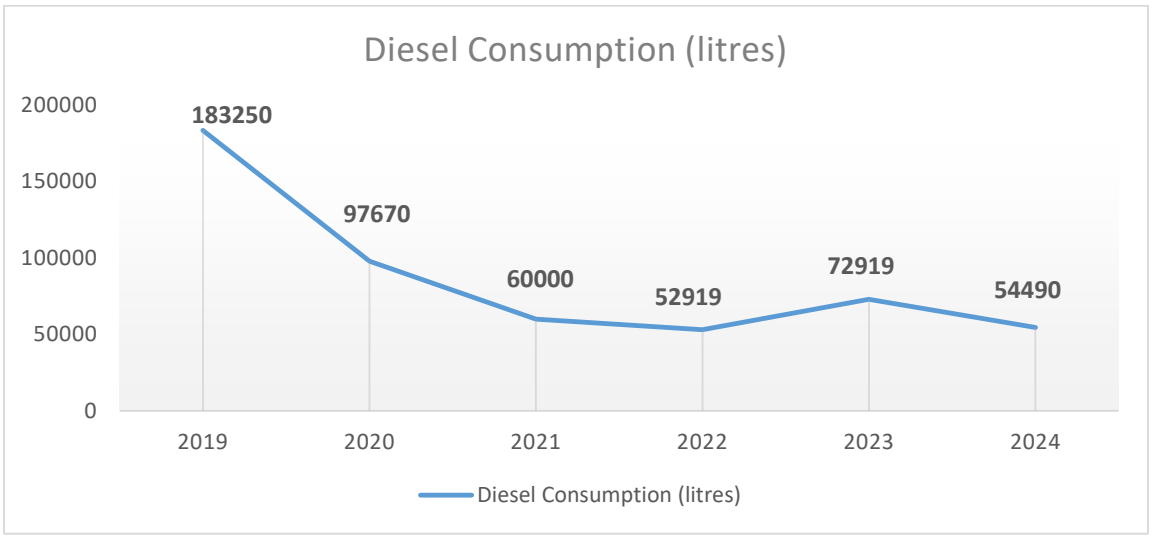
3. Energy Consumption Report

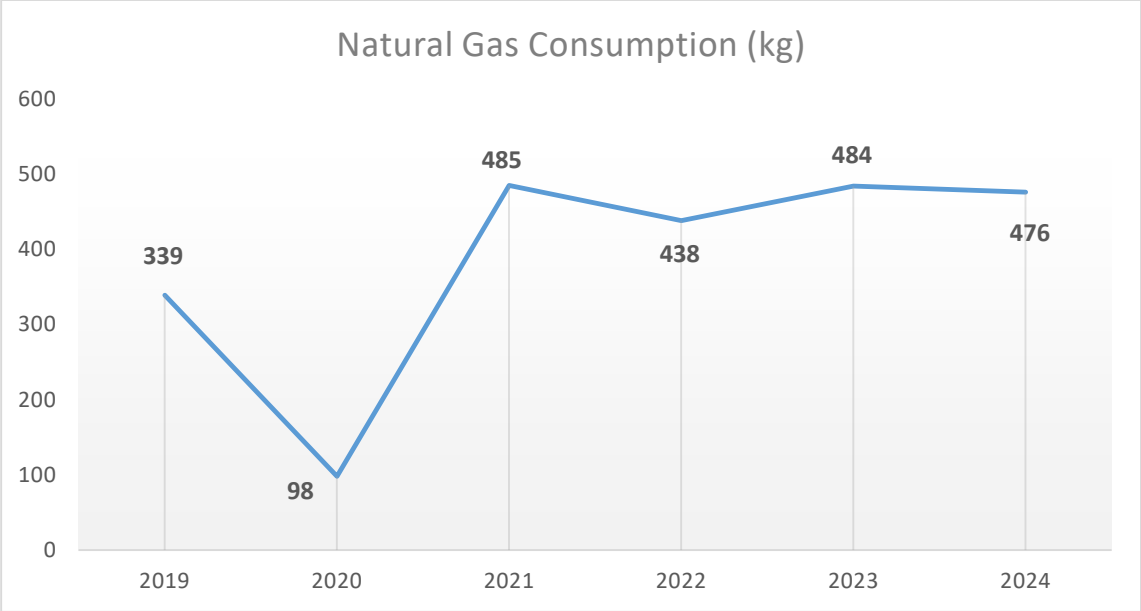
An-Najah National University regularly monitors and reports its energy consumption across all its campuses. The **Energy Consumption Report** for 2023-2024 highlights the university's commitment to transparency in tracking energy usage and identifying areas for improvement. Key findings from the report include:

- **Electricity Usage**: The university's electricity consumption has been steadily decreasing due to the implementation of energy-efficient lighting and air conditioning systems.



- **Other Energy Usage (Natural Gas & Diesel)**: The university's fuel consumption has been steadily decreasing due to the implementation of carbon reduction strategy.





The report is reviewed annually to assess progress toward energy reduction targets and to adjust strategies as needed.

4. Energy Wastage Auditing

An-Najah National University has initiated an energy audit to identify key practices that can enhance energy efficiency. The audit focuses on analyzing energy consumption behavior, as well as the usage of electrical appliances, equipment, machinery, and building activities that impact energy use. The goal is to improve energy efficiency across the university's facilities.

Scope of Work for the Energy Audit at ANNU:

- Analysis of the energy situation in buildings
- Calculation of specific consumption (BTU/sq ft or BTU/person/visitor)
- Comparison with national and international reference values for similar facilities
- Distribution of energy consumption by usage
- Energy balances (electric and thermal) post-measurements
- Calculation of the Energy Use Index
- Identification of energy conservation potential
- Definition of Energy Conservation Measures (ECMs)

4. Future Energy Reduction Plan

In line with its long-term vision for sustainability, An-Najah National University has established a **Future Energy Reduction Plan**. This plan sets clear targets and outlines practical steps to be achieved by 2030, including:

- **Increased Use of Renewable Energy**: The university aims to cover at least 70% of its energy consumption through renewable energy sources by 2030.
- **Smart Building Technologies**: Plans are in place to install smart building technologies that automatically regulate energy use based on occupancy, weather conditions, and building needs.
- **Retrofitting Existing Buildings**: The university will continue retrofitting existing buildings to improve insulation, upgrade HVAC systems, and replace outdated equipment with energy-efficient alternatives.
- **Energy Efficiency Training**: Training programs will be provided to staff and students to promote energy-saving practices and foster a culture of sustainability across the campus.
- **The action plan main targets to reduce overall energy consumption and increase the energy efficiency**

NO.	Activity	2019	2020	2021	2022	2023	2024	2025
1	Upgrade Building Lighting Systems to Led	10%	15%	15%	15%	15%	15%	15%
2	Upgrade Outdoor Lighting Systems to Led	50%	50%					
3	Investigate Automatic Controls for Lighting	10%	15%	15%	15%	15%	15%	15%

4	Review HVAC Schedules and Set Points	Done						
5	Integrate HVAC Equipment into BMS	20%	40%	40%				
6	Optimize HVAC Systems and Controls	Done						
7	Investigate Building Heat Gain Reduction Strategies	50%	50%					
8	Evaluate Efficient Hot Water Systems and Controls	Done						
9	Evaluate Condition of Water Pipe Insulation	Done						
10	Assess Strategies to Reduce Swimming Pool Heating Demand	Done						
11	Investigate Energy Reduction Strategies for Information and Communication Technology Systems	Done						
12	Investigate Overnight Energy Consumption	50%	50%					
13	Review Power Factor Correction	Done						
14	Conduct Energy Saving Audits	Running						

5. Commitment to Palestine Green Building Guideline 2024

An-Najah National University fully adheres to the **Palestine Green Building Guideline 2024**, applying its standards in all new construction projects and building renovations. This guideline emphasizes sustainable construction practices and the efficient use of resources, particularly energy and water. Key applications of the guideline include:

- **Energy Use Efficiency**: New buildings are designed to maximize natural light, reduce the need for artificial lighting, and utilize energy-efficient heating and cooling systems.
- **Water Conservation**: Rainwater harvesting systems are incorporated into building designs to minimize water waste and reduce reliance on municipal water supplies.
- **Sustainable Materials**: The university ensures that all new buildings and renovations use sustainable and locally sourced building materials, further reducing the environmental impact.
- **Waste Management**: Construction waste is minimized and recycled where possible, in line with the principles of the Palestine Green Building Guideline.

Conclusion

An-Najah National University is actively pursuing a multifaceted approach to reducing its overall energy consumption through the implementation of a climate action plan, the preparation of annual consumption reports, a forward-looking energy reduction plan, and the strict application of the Palestine Green Building Guideline 2024. Through these initiatives, the university is not only reducing its carbon footprint but also fostering a culture of sustainability that will benefit future generations.

The university’s commitment to energy efficiency and climate action aligns with its broader sustainability goals and supports global efforts to combat climate change.