ENERGY EFFICIENCY PLAN

2026–2030

Navoi State University | Institutional Energy Efficiency, Building Upgrade and Sustainable Energy Management Framework

Document information	Details
Institution	Navoi State University
Planning period	2026–2030
Scope	Academic, administrative, laboratory, residential and supporting facilities
Responsible institutional area	Energy Efficiency, Infrastructure and Sustainable Campus Management
Review frequency	At least annually
Related institutional framework	Carbon Management and Carbon Reduction Plan 2025–2030

1. Overview and institutional commitment

Navoi State University is committed to reducing unnecessary energy consumption, improving the energy performance of its existing buildings and technical infrastructure, and integrating energy efficiency into future campus development. This Plan provides a coordinated institutional mechanism for assessing, upgrading, monitoring and continuously improving energy performance during 2026–2030.

The Plan prioritises reducing energy demand before or alongside the deployment of renewable energy. It addresses electricity and thermal-energy uses, operational practices, building renovation, equipment procurement, data quality and governance. The University will distinguish verified outcomes from proposed interventions and will use comparable baseline data before claiming percentage reductions.

2. Existing infrastructure and energy baseline

The University enters the 2026–2030 planning period with significant existing energy-efficiency infrastructure. These reported figures establish an initial inventory; annual comparability and system boundaries will be verified as part of the monitoring programme.

Existing measure / indicator	Reported status	Monitoring implication
LED lighting	Approximately 180,000 lighting units; reported 100% LED transition	Maintain coverage, verify inventories, optimise operating schedules
Solar water heating	45 installed systems	Record operational status

		and hot-water performance
Solar photovoltaic capacity	510 kW reported (350 kW in 2022 plus 160 kW in 2023)	Verify asset register and annual generation
Parking-area solar installation	140 kW installation reported	Reconcile whether included in the 510 kW total
Electricity consumption	750,525 kWh in relevant reporting context	Confirm reporting dates and meter boundary
Renewable electricity generation	887,800 kWh in relevant reporting context	Confirm reporting dates, technology coverage and accounting boundary

The 510 kW installed-capacity figure and the separately described 140 kW parking-area installation must be reconciled in the asset register before capacities are aggregated. The reported electricity consumption and renewable generation are reference values, not a verified energy-saving percentage or proof of net annual energy independence.

3. Strategic objectives

- Reduce avoidable electricity and thermal-energy demand without compromising teaching, research, safety or comfort.
- Upgrade existing buildings toward higher energy-efficiency performance through evidence-based refurbishment and technical improvements.
- Develop building-level baselines and energy-intensity indicators to support meaningful year-on-year comparisons.
- Improve HVAC, lighting controls, hot-water systems, building envelopes and energy-intensive equipment.
- Embed energy performance in procurement, maintenance, renovation and new construction decisions.
- Maintain and optimise renewable-energy systems while separately measuring their contribution.
- Establish accountable governance, periodic review and documented evidence of implementation.

4. Strategic priority I — Upgrading existing buildings

4.1 Building assessment and prioritisation

The University will progressively assess academic buildings, administrative facilities, laboratories, dormitories, cafeterias and high-consumption technical areas. Assessments will review building use, floor area, occupancy, electricity and thermal consumption, HVAC condition, lighting control, insulation, windows and doors, and maintenance

requirements. A building-level opportunity register will record expected benefits, costs, technical feasibility and implementation status.

4.2 Building-envelope improvements

Where technically and economically justified, renovation projects will consider roof and wall insulation, improved glazing, weather sealing, efficient doors, shading, passive cooling and other heat-loss or heat-gain reduction measures. The selected solution will reflect building condition, climate, operational needs and available funding.

4.3 HVAC and thermal-system optimisation

Priority interventions include planned maintenance, thermostat and schedule optimisation, reducing simultaneous heating and cooling, appropriate zoning, repair of malfunctioning systems, and replacement of inefficient equipment when supported by technical assessment. Any upgrade will be evaluated for comfort, ventilation, maintenance and lifecycle costs.

4.4 Lighting and controls

Building on the reported complete LED conversion, the University will focus on lighting quality, preventive maintenance, scheduling, occupancy-sensitive controls and daylight utilisation where feasible. Lighting replacement counts alone will not be treated as measured energy savings.

4.5 Hot water and energy-efficient equipment

The University will maintain the 45 solar water-heating systems, inspect insulation and distribution losses, assess demand patterns and evaluate suitable expansion. Equipment procurement will increasingly consider energy performance, operational compatibility, expected service life and lifecycle cost.

5. Strategic priority II — Smart metering and operational energy management

The University will strengthen the consistency of meter readings, utility invoices, asset inventories and facility-level records. Priority buildings will be considered for separate or improved metering where feasible. Monthly monitoring will identify unusual changes, while annual analysis will compare consistent reporting periods and account for building use and occupancy.

- Create an institutional energy register covering meters, buildings, floor area and major energy systems.
- Define a consistent reporting period and verify baseline consumption for each priority building.
- Monitor electricity consumption, energy intensity and renewable generation as distinct indicators.

- Document energy-saving opportunities and record whether savings are estimated or measured.
- Train relevant facility staff in shutdown routines, equipment scheduling and fault reporting.

6. Strategic priority III — Renewable energy integration

The University will maintain and monitor its reported 510 kW solar PV portfolio, the separately identified 140 kW parking-area installation, and 45 solar water-heating systems. Its broader renewable-energy programme also includes small-scale wind generation and micro-hydropower pilot systems. Technical assessments may identify opportunities for further solar installations, storage, generation monitoring and better matching of demand to on-site generation.

Renewable generation will be recorded separately from energy-efficiency improvements. A rise in renewable production does not, by itself, demonstrate a reduction in energy required to operate buildings.

7. Institutional governance and responsibilities

Body/function	Accountability
Rector	Overall strategic leadership and institutional oversight
Vice-Rector for Capital Constructions	Coordination of infrastructure and investment priorities
Unit for Coordination of Construction Works	Technical planning, supervision and documentation of upgrades
University Committee and Sustainability Committee	Review of implementation, sustainability performance and policy alignment
Relevant operational and facilities units	Meter readings, maintenance, facility inventories and operational implementation
Procurement and finance functions	Evaluation of lifecycle costs and legally available financing arrangements
Academic staff, students and facility users	Responsible energy-use practices and feedback

Implementation is a shared institutional responsibility. The designated coordinating units will consolidate evidence and report significant results to University management at least annually.

8. Implementation roadmap 2026–2030

Year	Priority actions	Expected documentary outputs
2026 — Establish	Confirm baseline and	Baseline register; asset

	building inventory; document LED, solar PV and solar-water-heating assets; identify priority facilities.	inventory; priority-building list
2027 — Assess	Conduct priority energy assessments; review HVAC operations; identify low-cost measures and investment candidates.	Assessment reports; opportunity register; operational action log
2028 — Upgrade	Implement technically and financially justified building and system upgrades; improve controls, equipment and insulation where feasible.	Approved project files; procurement records; before/after measurements
2029 — Expand	Extend successful upgrades; strengthen facility-level monitoring; integrate energy criteria into infrastructure planning.	Expanded monitoring records; performance reviews; updated investment priorities
2030 — Evaluate	Evaluate energy use and intensity against comparable baselines; review completed projects and prepare next planning cycle.	Final performance review; verified savings calculations; successor recommendations

9. Monitoring and key performance indicators

KPI	Unit/method	Reporting
Total purchased electricity	kWh; verified bills or meter records	Monthly / annually
Electricity by major facility	kWh per facility where available	Monthly / annually
Building energy intensity	kWh/m² per year, using verified floor area	Annually
Installed renewable capacity	kW; reconciled asset register	Annually
Renewable electricity generated	kWh; generation meter records	Monthly / annually
LED coverage	Percentage of lighting units	Annually
Solar water-heating availability	Number operational / number installed	Annually

Energy audits completed	Number and coverage of facilities	Annually
Building upgrade projects	Number, type and completion status	Annually
Verified energy savings	kWh, with baseline and measurement method	After project / annually
Operational training and engagement	Activities and participation where recorded	Annually

For each reported saving, the University will record the baseline period, reporting period, measurement boundary, calculation method and relevant operational changes. Proposed savings will be labelled estimates until verified. Where source data are insufficient, a quantitative reduction claim will be deferred.

10. Financing and project selection

Potential sources include institutional capital allocations, operational savings and reinvestment, national programmes, grants, partnerships and other legally available financing mechanisms. Individual projects will be prioritised using technical feasibility, expected demand reduction, lifecycle costs, payback where calculable, maintenance requirements, environmental benefits and disruption to campus operations. No financing arrangement or expenditure commitment is presumed unless separately approved.

11. Risk management and data assurance

Risk	Mitigation approach
Incomplete baseline or inconsistent boundaries	Validate meter coverage, dates, invoices and building inventories
Budget or procurement delays	Prioritise low-cost measures and stage capital projects
Equipment underperformance	Use preventive maintenance and post-installation checks
Operational disruption	Schedule work around academic and residential requirements
Unverified savings claims	Require documented before/after comparison and methods
Double counting renewable capacity	Reconcile individual installations with portfolio totals

13. Continuous improvement cycle

MEASURE → IDENTIFY → IMPLEMENT → MONITOR → REVIEW → IMPROVE → MEASURE

Measure: collect verified energy and asset data. Identify: locate high-consumption facilities and feasible interventions. Implement: deliver approved operational and capital measures. Monitor: track actual performance. Review: assess effectiveness and gaps. Improve: revise maintenance, investment and operational priorities. This cycle will guide annual review and adjustments through 2030.

14. Expected outcomes by 2030

- A more complete and consistent institutional energy-performance baseline.
- A prioritised, documented programme for upgrading existing buildings.
- Improved energy performance of major building systems where interventions are implemented.
- Stronger metering, energy-intensity reporting and operational accountability.
- Maintained LED lighting and solar water-heating infrastructure.
- Better integration of renewable generation with campus energy management.
- A verified evidence base for assessing future reductions in energy use and related emissions.

15. Relationship to the Carbon Management Plan

This Energy Efficiency Plan complements the Carbon Management and Carbon Reduction Plan 2025–2030. The carbon plan addresses low-carbon mobility, green campus transformation and sustainable energy sources; this Plan provides the more detailed building and operational demand-reduction pathway. Electricity consumption, renewable generation and related emissions may be reported across both frameworks, but the University will avoid double counting and will distinguish energy savings from avoided emissions.

16. Conclusion and institutional commitment

Navoi State University will pursue systematic improvements in existing-building performance, technical infrastructure, monitoring and energy-use practices throughout 2026–2030. The Plan combines already reported campus measures with a staged programme of assessment, investment, implementation and verification. Annual institutional review will ensure that decisions are guided by evidence and that future performance claims are supported by reliable, comparable data.

Approval and institutional responsibility

Field	Institutional record
Document	Navoi State University Energy Efficiency Plan 2026–2030
Responsible area	Energy Efficiency, Infrastructure and Sustainable Campus Management

Review frequency	At least annually
Prepared/approved by	Allaev Khurshid — Head of Sustainable Development Team
Approval date	20 January 2026