Punyashlok Ahilyadevi Holkar Solapur University, Solapur

University Campus Solar Energy Policy

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PUNYASHLOK AHILYADEVI SOLAPUR UNIVERSITY SOLAPUR,

UNIVERSITY CAMPUS SOLAR ENERGY POLICY

1. Vision & Objectives

Vision

To transform the university into a greener, energy-independent campus by integrating solar energy into operations, reducing carbon emissions and utility costs, and creating a living laboratory for student learning and cutting-edge research.

Objectives

1. Increase Solar Energy Production

Install Solar panels on rooftops and Open Grounds to Supply 25–40% Electricity, Aiming for Energy Neutrality in Key Buildings.

2. Ensure Long-Term Sustainability

Build Solar Infrastructure Using CAPEX (Campus–funded) and RESCO/PPA (Thirdparty) Models

3. Drive Operational Efficiency

Adopt Energy–saving technologies like LEDs, Energy–Efficient Appliances, and Smart Controls.

4. Integrate Solar into Education & Research

Embed Solar Topics in curricula and enable hands–On Projects. For Example, LITU Launched Workshops with Green Solution on Industrial Solar Applications.

5. Governance, Measurement & Reporting

Create a Sustain ability Committee with Faculty, Students, and Staff to Oversee Implementation and annual reviews. Track Solar Output, Cost Savings, Carbon Reductions, and Publish the Outcomes in Sustainability Reports to Ensure Transparency and accountability

5. Engage and Empower Campus Community

Conduct Awareness Campaigns, Celebrate Green Days, and involve Students in Sustainability Activities, Universities Frequently host clean energy events and Studentled Forums to inspire Community-wide Engagement.

6. Governance, Measurement & Reporting

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7. Forge Partnerships & Access Funding

Collaborate with government schemes such as the PM Surya Ghar Muft Bijli Yojana (launched Feb 29, 2024),which offers up to 60,00₹- 78,000₹in subsidies for rooftop solar systems under 3 kw.

Partner with organization such as Solar Energy Corporation of India (SECI) and thirdparty RESCO developer to Finance and operate systemsv with minimal upfront costapproches used by DU and JNU campuses.

2. Solar Infrastructure Development

Rooftop Solar Installations :

Rooftop Solar installations on academic Buildings such s hostels, Classrooms, and administrative blocks offer campuses an efficient way to harness underutilized flat, durable rooftop space to generate clean energy, Significantly reduces electricity costs by up to 60-70% and minimize carbon emission potentially covering 75% of their power needs while cutting their carbon footprint by around 28% These systems not Only provide financial savings that can be reinvested into campus infras-tructure or educational programs but also boost energy flexibility, enabling uninterrupted power during gird outages, Moreover, they serve as a hands-on educational resource, allowing students to monitor performance data,conduct stem projects and directly work with renewable energy, supporting environmental care and improving learning Lastly, through net-metering or RESCO/PP models, Campuses can even earn money by selling extra solar power to the grid or reduce costs though costs through third-party funding, making rooftop solar a practical, sustainable, and useful learning tool for educational institutions.

Ground- Mounted Solar Farms:

Ground–mounted solar farms use open campus land to install larger, better–oriented panels, generating more energy at a lower cost than rooftop systems. Trackers can boost output by 15–35% and easy access keeps maintenance inexpensive, Agrivoltaics allow crops, grazing animals, or pollinator plants under the panels, Improving land use and sometimes increasing yields, These systems are easy to expand and often qualify for financial incentives. Overall, they turn unused land into a powerful, low–cost clean–energy source with environmental and economic benefits.

Solar Water Heating Systems:

Installing solar water heaters in hostels and cafeterias is a clean, cost–saving alternative to electric geysers. Solar collectors preheat water and reduce heating costs by 50–80%. These systems are low–maintenance, Work even during power cuts, and usually pay for themselves within 2–5 years thanks to energy saving and 30–60% government subsidies. With a lifespan of 15–30 years, they lower CO2 emissions and ensure reliable hot water reducing campus operating costs.

Solar Street Lighting:

Solar Steetlight can illuminate compus pathways, parking areas, and common speces using PV panels, batteries, and LED Lamps. They cut energy use by up to 80% compared to traditional lights and usually pay for themselves in 3–5 years with saving and incentives. Because they are off–grid, they keep working during power cuts, improving nighttime safety and security

LED Solar lights give bright, Uniform lighting and can use sensors to adjust brightness, reducing energy use and light pollution, With no need for trenching or wiring, installation is easy, and maintenance is minimal. Overall

3. Energy Efficiency Measures

LED Lighting

Replacing all incandescent and fluorescent bulbs with LED Lighting greatly cuts energy use and costs. LEDs use 75–80% less power, convert most of better, more controllable bulbs. They contain no mercury, Produce less heat, and better, more sustainable campus. Overall, LED lighting is a quick, cost–effective upgrade that fits perfectly with smart and green campus goals.

Energy-Effcient Appliances:

Buying high-effciency appliances like refrigerators, washing machines, ACs, and dishwashers With high star ratings or energy Star labels helps reduce energy and water use, New refrigerators can save about 40% energy compared to old ones, and modern washers and smart thermostats further cut consumption through optimized cycles, Although these appliances cost more upfront, rebates and lower utility bills provide quick payback. Features like low-standly power and automatic adjustments also prevent energy waste, helping the campus meet its efficiency and emissionreduc-tion goals.

Building Design:

Using passive design features such as natural ventilation, good insulation, reflective roofs, shaded windows, courtyards, and well-placed openings keeps buildings cool and reduces the need for air conditioning and artifi-cial lighting. Bringing in naturel daylight through skylights, halls, and light shelves further cuts lighting energy use and improves comfort and well-being. Together, these strategies lower energy demand, reduce operating costs, and create healthier, more productive learning spaces that meet green-building standards.

4. Financial Models & Partnerships

Capital Expenditure (CAPEX) Model :

In the CAPEX Model, the university pays for and owns the solar system, Although it needs high upfront investment, it gives the most savings over time because all the solar power directly reduces electricity bills, With government subsidies, the payback is usually 5-7 years, After that, all energy produced is pure savings. The university also controls the operation and maintenance and can earn money by selling extra power through net-metering or internal billing systems.

Renewable Energy Service Company (RESCO) Model:

In the RESCO Model, a third-party company pays for, installs, and maintains the solar system, while the university buys only the electricity through a long-term PPA. This Zero-investment option gives campuses immediate access to clean energy with low risk. The university gets power at a fixed rate often cheaper than grid electricity while the vendor handles all repairs and performance issues. This model is becoming popular in India, such as Delhi,s PM Surya Ghar rollout, which provides free solar infrastru-cture and affordable power through RESCO.

Government Schemes :

Universities can benefit from national schemes like the Pradhan Mantri Surya Ghar Yojana (2024) which offers large subsidies 60% for systems up 3 kw (capped at ₹8,000) Low-interest loans and up to 300 free electricity units per month make solar very affordable. The scheme supports both

Small hostel installations and large campus projects and works well with CAPEX or RESCO Models by lowering costs and speeding up financial returns.

5. Operations & Maintenance

Regular Maintenance :

Regular Cleaning and inspection of solar panels are important for maintaining high energy output Dust and debris can reduce efficiency by 15–25% if not removed. A quarterly or seasonal maintenance schedule including panel cleaning, inverter checks, and wiring inspections helps prevent performance loss and extends the system's lifespan.

Monitoring Systems :

Real-time monitoring tools let campuses track solar energy production, spot faults quickly, and understand usage patterns, cloud dashboards and mobile apps show systems performance and CO_2 savings, making it easy to optimize output, verify energy saving, and repots ROI.

Training Programs :

Training staff and students to operate and maintain solar systems builds skills and a sense of ownership. Workshops or certification programs help facility teams handle basic troubleshooting and preventive maintenance. Involving students also strengthens academic learning and prepares them for future green-energy careers.

6. Policy Governance

Sustainability Committe:

A cross-functional sustainability committee with faculty, studens, administrators, and technical staff helps guide and monitor the university's solar policy. It corrdinates efforts, solves challenges, and ensures that technical work aligns with academic goals and student involvement.

Periodic Reviews:

Reviewing the policy each year helps measure progress in energy savings, carbon reduction, and system growth, Annual updates also allow for new technology, financial adjustments, and feedback, keeping the policy flexible and aligned with changing campus needs.

Reporting

Publishing an annual sustainability or energy report highlights the university's commitment to the environment. It should include data on solar power generation, energy use, cost savings, carbon

reductions, and future plans, sharing it publicly increases transparency, accountability, and support from funders and government agencies.

5. Community Engagement & Education

Awareness Campaigns :

Schools and colleges can encourage sustainable behaviour by hosting workshops, exhibitions, film screenings, and talks on renewable energy and climate change. These events can involve students. faculty, and the community, especially during days like Earth Day or Energy Conservation Week.

Student Involvement :

Getting students involved in solar projects through internships, research, or clubs builds innovation and ownership, Activities like energy audits, Solar mapping, or smart-energy design competitions can turn the campus into a hands-on sustainability lab.

Collaborations:

Partnering with other universities, NGOs, and industry helps share knowledge, resources, and best practices, Such collaborations can create joint research, shared training, and better access to funding and expertise, strengthening and expanding campus solar projects over time.

Summary

This solar policy provides a Strong, balanced plan for increasing clean energy, reducing costs, supporting practical leaning, and building a sustainable campus culture, with clear management, strong partnerships, and active campus involvement, universities can lead the move toward a greener future.

Annual policy reviews help track progress against established goals—such as energy savings, reduction in carbon footprint, and system expansion. These reviews can also incorporate technological upgrades, financial re-evaluation, and stakeholder feedback, ensuring the policy remains dynamic and responsive to evolving campus needs and external developments.

Reporting:

Publishing an annual sustainability or energy performance report showcases the institution's commitment to environmental responsibility. Reports should include data on solar energy generation, usage patterns, cost savings, carbon emission reductions, and future plans. Making these publicly available enhances transparency, encourages accountability, and attracts support from funding agencies or government bodies.

7. Community Engagement & Education

Awareness Campaigns:

Educational institutions play a key role in shaping sustainable behavior. Organizing workshops, exhibitions, film screenings, and public lectures can raise awareness about renewable energy and climate change among students, faculty, and local communities. These campaigns can coincide with global observances like Earth Day or Energy Conservation Week to maximize impact.

Student Involvement:

Encouraging students to take part in solar energy initiatives—through internships, research projects, or clubs—helps build a culture of innovation and ownership. Student-led energy audits, solar mapping projects, or competitions for designing smart energy systems can turn the campus into a living lab for sustainability.

Collaborations:

Partnering with other universities, NGOs, and industry players fosters the exchange of knowledge, resources, and best practices. These collaborations can lead to joint research initiatives, shared training programs, and improved access to funding or technical expertise—helping scale and sustain campus solar energy initiatives over the long term

Summary

This solar policy offers a balanced framework: boosting clean energy use, saving money, powering real-world learning, and fostering a sustainable campus culture. By establishing clear governance, leveraging partnerships, and engaging the entire campus community, universities can lead the way toward a greener future.

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