Best Practice 1:

a) Title of the practice: Green Energy: Sustainable Energy

b) Goal:

In the modern industrialized society, with the technology advancement, the perception of environment has changed drastically away from the traditional view about the man and environment inter relationships where the traditional wisdom about nature and co- existence has been ignored and even forgotten. It is therefore recommended by the environment and education experts and thinkersthat the younger generation needs to be made aware of the entire gamut of the man and environment inter relationship. This can bestbe achieved by exposing the students to the real life situation at their learning center by creating and sustaining a green campus. Hence a humble beginning is made by the VPIMSR to adopt the renewable energy sources by installation of Roof Tops Solar panels for power generation on the library building and Solar Heaters at the ladies hostel. Thus it is a miniscule contribution towards the National Goal of Sustainable quality environment. Energy management is the process of tracking and optimizing energy consumption to conserve usage in a building. The process of energy management includes, collecting and analyzing continuous data, identifying optimizations in equipment schedules, setting points and flow rates to improve energy efficiency. Units of energy saved can be metered in Kwt. and calculated just like units of energy delivered. Energy management is the means of controlling and reducing a building's energy consumption, which enables owners and operators to Reduce costs, Reduce carbon emissions and Reduce risk.

c) The Context:

Renewable energy is derived from natural sources that are replenished at a higher rate than they are consumed. Generation renewable energy creates far lower emissions than burning fossil fuels. Renewable power is booming as innovations bring down costs and starts to deliver on the promise of a clean energy future. Renewable energy, often referred to as a clear energy, comes from natural sources or processes that are constantly replenished. While renewable energy is often thought of as a new technology, harnessingnature's power has long been used for heating, lighting and many more.

Rooftop Solar Panels on the buildings which can sell power back to the grid.

A key goal will be to modernize the Institute's electricity grid, making it smarter and more secure.

Electricity and LPG are the forms of energy majorly used in higher education institutes. Use of LED lights instead of incandescent lamp and tube lights is one of the important green practices followed by VPIMSR. Along with use of LED lamps, use of natural ventilation, natural light are useful practices carried out to reduce the use of electricity.

d) The Practice:

At VPIMSR, energy conservation measures are taken up by means of replacing all conventional bulbs by low energy consuming bulbs. Few energy conservation measures adopted by VPIMSR are i) Solar Rooftop and ii) Solar Heaters

VPIMSR has installed Solar Rooftops mounted on the College building and installation of 2 Solar Water Heater Systems with 500 LPD in the Ladies Hostel. In addition, replacement of old incandescent bulb and tube lights by LED lamps has been followed and is continued till date by VPIMSR as a response towards green practices of energy conservation.

e) Evidence of success:

Energy Consumption (in Units) :

Fixed PV installations rooftop-mounted systems are employed at VPIMSR, with the capacity 30 KV. These solar panels are working in full capacity. It is depicted from Mahavitaran electricity bills

of VPIMSR that the bill is reduced by 70%. Thus solar photovoltaic panels installed on rooftop of library building of Canadian Technology are efficient in harnessing solar energy throughout the year. Solar Photovoltaic street lamps are also installed at VPIMSR, Sangli, which are efficiently working. VPIMSR has used six solar street lights with 9W LED outdoor luminarysolar photovoltaic panel in open spaces. This is considerably reduced energy **consumption**. Nevertheless, experimental high efficiency solar cells already have efficiencies of over 40% in case of concentrating photovoltaic cells and efficiencies are rapidly rising while mass- production costs are rapidly falling.

Energy utilized in five year at VPIMSR, Sangli

Solar panels were implemented in December 2018. From April 2016 to November 2018 total energy consumption was 68665 and after implementation total energy consumption From December 2018 to October 2021 (Green audit) was 11123.

Mean consumption before implementation 2985.434783 and Mean consumption after implementation was 461.3824

To hypothetically prove significance difference mean before and after consumption t test was applied Considering ,Df=24Alpha 0.05

Critical value was 1.52 and calculated value was 2.06 which is below significance level. Hence it is proved that there is significance difference in mean of energy consumption before and after implementation of solarpanels.

Solar energy is the most abundant of all energy resources. The rate at which solar energy is intercepted by the Earth is about 10,000 times greater than the rate at which humankind consumes energy.

Solar panels harness sunlight to generate electricity. So, they pose fewer pollution risks to the environment in comparison to conventional sourcesof energy. Unlike a generator, they run without producing any noise and give out lesser emissions of harmful gases. Furthermore, it is a good source of energy that combats climate change. Thus, rooftop solar is ideal as it reduces carbon footprints.

f) Problems Encountered and Resources Required:

Finding out the suitable source for installation was a tedious task due to lack of technical expertise. Besides, the pandemic situation had also delayed the process. Furthermore resources to avail this equipment became more costly due to pandemic as labour charges were more. Later on seasonality also affected the use of energy through solar panels. Heavy maintenance charges are another problem encountered.

Best Practice 2:

a) Title of the practice: Green Campus Initiatives

b) Goal:

The most serious threat humanity has ever faced in the history of mankind is the loss of environmental quality. Environmental degradation is a global problem which is directly related to natural global resource depletion in quality and quantity. Lack of environmental awareness and concern in the society is basically responsible for the degradation of environment. In order to protect thepresent and the future generations from the difficulties faced today there should be at least a minimum understanding about man and his interactions with environment. Accordingly the VPIMSR has made a beginning to create a green campus so as to bring awareness among the students and the society.

VPIMSR, is committed to achieve a sustainable development goal setforth by directive principles of Indian Constitution for improvingsocial, economic and environmental wellbeing of the society with theconservation of biodiversity, encouraging students for keeping cleanand green campus through sustainable approach in EnvironmentManagement. VPIMSR is dedicated to environmental developmentsthat foster a sustainable future. VPIMSR takes great pride infollowing the Environmental Mission which states as follows: Creating Awareness amongst students, teachers and all other stakeholders in terms of : i) Plastic free campus, ii) Energy conservation iii) Rain water Harvesting, and iv) Environmental and Social Outreach programmes.

b) The Context:

A Green Campus is a place where environmental friendly practices and education combine to promote sustainable and eco-friendly practices in the campus. The green campus concept offers an institution the opportunity to take the lead in redefining its environmental culture and developing new paradigms by creating sustainable solutions to environmental, social and economic needs of the mankind. To preserve the environment within the campus such as promotion of energy savings, recycling of waste, water use reduction,water harvesting etc, Green Audit is practiced at VPIMSR. In keeping with the needs of the National interest of Swachh Bharat, VPIMSR, is well aware about environmental issues and has gone through its environmental audit for better understanding of environmental aspects and impacts of the activities carried out at VPIMSR campus on the environment.

Green Audit is a process of assessing the environmental impact of an organization, process, project, product, etc. Green means eco-friendly environment. The educational institutes are playing a key role in development of human resources worldwide. Higher education institutesrun various activities with aim to percolate the knowledge along with practical dimension among the society. Likewise, higher education institutes/colleges are also aiming to offer different technological solutions for issues relating to environment. Types of evolutionary methods used to assess the problem concerning environment, includes Environmental Impact Assessment (EIA), Social Impact Assessment (SIA), Carbon Footprint Mapping, Green Audit, Energy Audit, Water Audit etc.

Green audit has helped Institute to assess general practices implemented in term of its impact on surrounding environment. Green audit has shown strength and weakness of the Institute towards conservationof environment. It has pinpointed the adverse practices of natural resources utilization along with the path to build, implement and test new innovative systems for better utilization of

natural resources and minimization of waste generation through the principles of waste management like Reduce, Reuse and Recycle, etc. It has helped to achieve thegoal of VPIMSR to become a role model in higher education for sustainable campus in environmental views. VPIMSR has ensured that their environmental performance is in compliance with applicable laws and regulations, to identify potential liabilities, to align with environmental performance with their stated goals and strategy, to identify opportunities to reduce costs or increase revenue, to improve process and materials efficiency, and in response to stakeholder's requests for increased disclosure.

Through environmental audit Institute has identified their full range of environmental aspects and impacts. It has served as a means to identify opportunities to save money, enhance work quality, improve employee health and safety, reduce liabilities, and achieve otherforms of business value.

In keeping with the need of the National interest of Swachta and Swastha Bharat, VPIMSR, Sangli is well aware about environmental issues and has gone through its environmental audit for better understanding of environmental aspects and impacts of the activities carried out at the Institute campus on the environment.

d) The Practice:

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VPIMSR is aimed at balancing environmental protection and the conservation of natural resources with other policy goals, such as affordable energy, air and drinking water quality monitoring, rainwater harvesting. Green Campus Committee of the Institute has established clean and green campus with awareness and protection and in fulfilling environmental goals and sustainable development goals set forth to implement environmental policies given by government from time to time. NSS students are frontiers and other students and staff members are supporting the implementation of the environmental policy. VPIMSR, has installed Roof Top Solar Photovoltaic Panel for harnessing solar energy. Electricity generated by solar panels is used in the Institute premises.

Besides, VPIMSR campus has huge potential for roof top rainwater harvesting and the water collected is used for recharging bore well water and storing water during rainy season in the underground tanks.Total roof top area used for rainwater harvesting is 1981.19 sq. m. Sangli has almost 1000m average annual rainfall. Considering 20% as evaporation loss, actual water available for harvesting would be 800mm or 0.8m. Volume of water that is available for harvesting is 1981.19m x 0.8m = 1584.952 m3. Converting into liters, rainwater available is 1584.952 m3 x 1000= 15,84,952 lit. Almost 63 % of totalwater requirement is made through rainwater harvesting.

The Institute's irrigation system includes a variety of measures to ensure that campus is irrigated appropriately. Sprinkler irrigation has been systematically installed, reducing the wastage of water in campus. The Institute has significantly reduced the watering scheduledown to a base for two times per week. Watering occurs more than twice a week when weather or other conditions require it.

VPIMSR is committed to good working environment on the campus by means of providing good quality of water, quality of air and sound. Periodically the samples are collected and analyzed for

pollution parameters. The values of air, water and noise parameters are observed within the prescribed limits. These parameters are slightly elevated in the campus but are under the prescribed limit of CPCB. Noise level inside the college is below the limit and in suitable range. The college has planted some trees and planning to plant some more to screen the noise and to filter the suspended particulate matters.

Carbon footprints are a simple way to think about ways to reduce environmental pollution. At VPIMSR carbon footprint for indoor lighting in office building is considered. The performance of the building has been increased by using LED lights which reduces the building carbon foot print. Replacement of old incandescent bulb and tube lights by LED lamps has been followed and will be continued in the same manner by VPIMSR as a moral responsibility towards green practices of energy conservation.

Environment Awareness & Campus Cleanliness Activities:

To sensitize the student about environment, VPIMSR is continuously creating the awareness amongthe students and public through NSS and conducting other various related activities. To make people aware about importance of trees and environment cleanliness in the economy of the nature and humanlives, VPIMSR organizes numerous activities. To name a few: **Clean India‟ Plogging Run Activity Conducted by National Service Scheme (NSS) & NYKS , Swachhta Abhiyan through N. S. S at Various Locations.**

e) Evidence of success:

Photovoltaic (PV) is the conversion of light into electricity using the photovoltaic effect and is commercially utilized for electricity generation.

Fixed PV installations rooftop-mounted systems are employed at VPIMSR, with the capacity 30 KV. These solar panels are working in full capacity. It is depicted from Mahavitaran electricity bills of VPIMSR that the bill is reduced bills by 70%. Thus solar photovoltaic panels installed on rooftop of library building are efficient in harnessing solar energy throughout the year.

Such kind of installations for harnessing renewable energy resources hasa potential to mitigate the global warming by CO_2 reduction. Solar PV has specific advantages as an energy source- once installed, its operationgenerates no pollution and no greenhouse gas emissions. It shows simple scalability in respect of power needs and silicon has large availability in the Earth's crust, although other materials required in PV system manufacture such as silver will eventually constrain further growth inthe technology. The use of PV as a main source requires energy storage systems or distribution. Save Energy is the motto of every day’s working at VPIMSR.

f) Problems Encountered and Resources Required:

During the Lockdown period, maintenance of the Green campus was quite challenging due to lack of Man Power. During this period our campus was demanding for Refurbishment. To Rejuvenate and Restore the Green Campus was the major problem encountered.