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Off Grid Challenge

According to supposition, the cost and affect of going off-grid is to be determined. From the analysis of a number of renewable resources including petroleum fired, coal-fired, solar and hydroelectric, we generate one method to replace all energy consumptions with a renewable resource for a 100 square feet house.

A mini hydroelectric setup on area with the head of 270 meter approximately is required. According to Oregon, their net power generation for one month is 1940 MWh. In fact, they launch their projects on large areas. Hydroelectric constitutes 10 % of the total 17 % of electricity generated through renewable resources in US. For electricity,

10m/s2\* (liter/sec)0.3m3/s \* 270 m \* 0.5  =  405 m5/s3
                                                = 405 m5/s3 \* 1000 kg/m3(water density)
                                                = 405000 J/s
                                                = 405000 W
                                                = 405 kW which is 400 kWh approx..

3.34 MBTU of natural gas heating can be substituted by using this in one month. For one year 3.34\* 12 = 40.8 MBTU.

Based on rough estimation, cost is between $15000and $40000 combining the expenses of turbines, Kaplan, propeller etc.

The use of renewable resources of energy is better for country’s economy. The expenses other than maintenance are very limited after installation. The efficiency, however is one issue which may be a reason of scarcity of the use of domestic plants with renewable energy resources. The efficiency of the generators used in grids is 90 % approximately while these small systems are efficient up to 50 %. These systems are valuable when it comes to saving the energy using renewable resources but initial deployment is not easy. Further, issues related to maintenance of the such installed systems on domestic level are also a reason for people not selecting to go off-grid. It is feasible and possesses very bright prospects in terms of dealing with shortage of resources and overcoming environment related concerns. So, people are needed to be appreciated and supported by government to carry out such incentives.