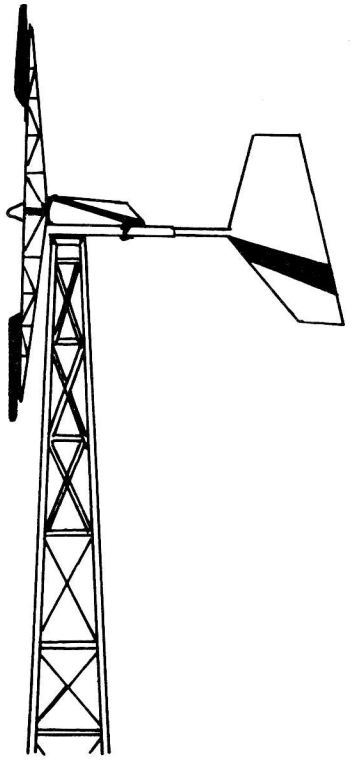
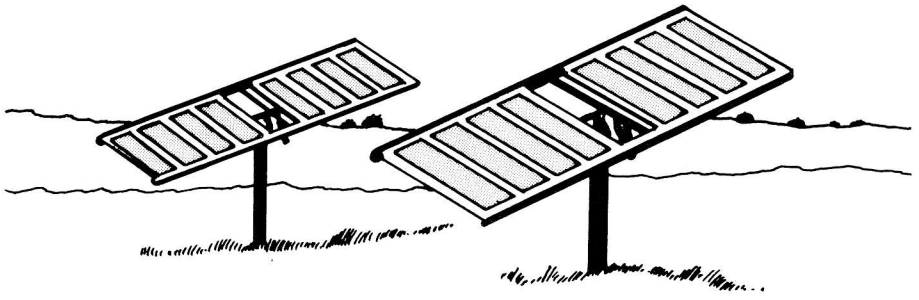
Energy Resource Development

The Energy Resource Development curriculum, as taught at SEVA, covers solar, wind, and organic (methane and alcohol) sources of energy. The program aims to create an environment in which the student can gain a familiarity with renewable energy, a basic understanding of its principles, and, ultimately, an ability to design and build appropriate scale energy plants.

Renewable Energy Series
This series introduces the students to solar, wind and organic (methane and alcohol) sources of electrical and mechanical energy. Its goal is to give the students both the theoretical background to design an appropriate scale energy plant and the technical skills to build the system. The course is divided into two sections:





Renewable Energy I:
Solar and Wind

Students learn solar and wind site selection, and how to estimate available solar radiation, wind speeds, and energy demand. Students are also instructed in AC and DC electricity basics, photovoltaic and wind generator theory, and installation and operating practices. Specific projects include:

(1) a 3 Kilowatt photovoltaic plant with DC to AC power conversion;

(2) a 10 Kilowatt wind electric plant to smooth out the winter drop in photovoltaic energy and meet greater winter electrical demand; and

(3) a water-pumping windmill installation.

Renewable Energy II
Organic (Methane & Alcohol)
Students learn the process of methane production from human and animal waste, alcohol production from a variety of crops, methods of methane digestion and alcohol distillation, and use of methane gas and alcohol as energy sources.