

# Nevada Renewable Energy Consortium (NVREC)



## Overview of NVREC

### What is NVREC?

The Nevada Renewable Energy Consortium was brought forward by Senator Townsend in conjunction with Senator Reid. The Consortium is an association among the three Nevada System of Higher Education (NSHE) research institutions (Desert Research Institute: Universities of Nevada at Reno and Las Vegas), along with participating Nevada community colleges.

The scope of the Consortium is to expand, accelerate, and coordinate basic and applied renewable energy research and development across NSHE institutions

The ultimate purpose of the Consortium is to help Nevada achieve its vision of being a national leader in renewable energy research, development, and work force development.

### Specific Goals

- Increase the national renewable energy research competitiveness of NSHE's research institutions by fostering research collaboration.
- Develop an NSHE inventory of research capabilities, facilities and educational and outreach programs, and develop a clear strategic plan for future growth.
- Enhance outreach, training and workforce development programs with participating community colleges.
- Build partnerships with industry and enhance the opportunities for expanding the economic impact of renewable energy programs in Nevada.
- Increase commercialization, economic analysis, public policy and outreach capabilities in renewable energy.



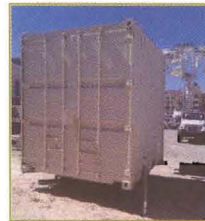
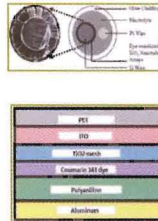
## Year One Projects

### Biofuels



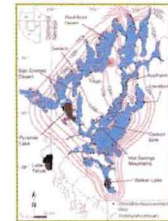
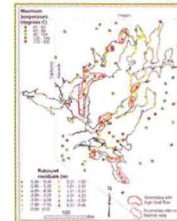
- Pre-Treatment of Lignocellulosic Biomass (DRI, UNR)
- Thermal Treatment of Biomass (DRI, UNR)
- Algal-Based Fuels (DRI, UNR, UNLV)
- Chemically promoted mechanical dewatering of wastewater sludge (UNR, DRI)

### Solar



- Low Cost, High Efficient Flexible Solar Cells (UNR)
- Hydrogen Generation by Natural Gas Decomposition Using Molten Salt Solar Thermal Storage (UNR)
- Solar Research Tower (UNLV)
- Façade Evaluation Facility (FEF) project (UNLV)

### Geothermal



- Hyperspectral Remote Sensing (DRI)
- Shallow Temperature and Soil Gas Surveys (UNR)
- Geothermal Prospecting: Relationships Between Regional Heat Flow and Isostatic Rebound Patterns in the Great Basin (DRI)
- Geothermal-Life Cycle (UNR)

## Year Two Projects

### Biofuels

- Optimized Hydrothermal Pre-Treatment of Nevada Biomass (DRI, UNR)
- Municipal Wastewater for Microalgae Biofuel Feedstock Production (UNR, DRI)
- Novel Thermophilic Microorganisms and Cellulases for Improving Second-Generation Biofuel Technologies (UNLV, DRI)
- Biomass and Biofuel Production from Plants Suited for Nevada's Arid Environment (UNR, UNLV, DRI)

### Related Technologies

- Nano-Structured Polymer Electrolyte Membranes for Hydrogen Fuel Cell Applications (UNLV, DRI)
- Smart Grid-Balancing Intermittent Renewable Generation with Controllable HVAC Load (UNR, UNLV)

### Workforce Development

- Professional Workforce Development in Renewable Energy through an Online Certification Program (UNR, DRI, UNLV)
- Development of a Workforce Training Certificate Program in Renewable Energy Systems Integration with the Electric Grid (UNLV, UNR)



### Solar

- Liquid Crystal-Based Photovoltaic Cells (UNR, UNLV, DRI)
- Solid State Dye Sensitized Solar Cells (UNR, UNLV)
- Synthesis and Characterization of Novel (IV, II) VI Group Materials for Solar Energy Utilization (UNLV, UNR)
- Enabling Technologies for Solar Energy Development in Nevada (UNLV, DRI)
- Salinity Gradient Solar Ponds for Collection and Storage of Solar Energy - Water Desalination using Renewable Energy (UNR, UNLV)

### Resource Assessment

- Forecasting Wind and Solar Resources and Renewable Energy Storage Feasibility in Complex Terrain (DRI, UNR)