ENERGYEXECS
NREL Executive Energy Leadership Program

SAMPLE SYLLABUS, Executive Energy Leadership Program

Session 1	Introduction to NREL and National Energy Challenges
Session 2	Super-Energy-Efficient Buildings and Wind Power: Building the Electric Utility of the 21st Century
Session 3	Utility-Scale Renewable Energy
Session 4	Energy-efficient Transportation, Biofuels and Putting It All Together in Communities of the Future
Session 5	Student Projects and Graduation

Session 1

Introduction to NREL; America's Energy Challenges and Opportunities

- Student introductions and networking
- *Meet the NREL Director*: Presentation by, and discussion with, Dr. Dan Arvizu
- *Field Trips*: "Behind the Fence" tour of NREL's South Table Mountain facilities and super energy-efficient Research Support Facility
- *Course Content:* The Campus of the Future: Facility Design and Sustainability Practices
- Hosted evening reception

Session 2

Super-Energy-Efficient Buildings and Wind Power: Building the Electric Utility of the 21st Century

- *Course Content, Buildings*: Buildings account for 72 percent of America's electricity use. How can their power footprint be reduced? By how much and at what cost? What might be the impact on electric utilities? Could neighborhoods of net-zero-energy or energy-producing buildings contribute to a utility's generating portfolio? Building design and construction, performance characteristics, analytical tools, cost.
- *Course Content, Wind Energy:* What is the state of wind power technology? Technology overview, performance characteristics, costs, analytical tools, measurement of economic development impacts.
- *Field Trip:* Denver Museum of Nature and Science (Photovoltaic, energy efficiency retrofits)

Session 3

Utility-Scale Renewable Electricity

- *Course Content:* Concentrating solar and utility-scale photovoltaics; grid-integration issues for intermittent resources

- *Overnight Field trip*: Vestas wind tower manufacturing plant, Pueblo; utility-scale solar plant, Alamosa; panel discussion of local community leaders regarding impacts and future of utility-scale renewable energy in their locale.

Session 4

Energy-efficient Transportation, Biofuels and Putting It All Together in Communities of the Future

- *Course Content, Transportation & Fuels:* America imports more than 70 percent of the oil needed to move our vehicles, yet only 20 percent of the energy content in gasoline actually moves the vehicle's wheels. How can we address the technological inefficiencies that also have critical implications for our national security? This unit will explore the challenges and opportunities in transportation; biofuels; electric vehicles; NREL's work to improve vehicle efficiency.
- *Field Trip:*
- *Course Content, Communities of the Future:* A summary view of transportation, electricity and buildings technologies that can be deployed in the community of the future. Analytical tools.

Session 5

Class Projects and Graduation

- Student presentations of their projects
- Graduation
- *Field Trip*: Utility-scale wind farm