



NOAA Can Help Solve the U.S. Energy-Climate-Economic Crisis by Supporting Renewable Energy Development



Today's energy system, based primarily on fossil fuels, poses risks to our nation's energy security, economy, and climate.

Renewable energy sources such as the Sun and wind depend on meteorology. Modernizing the national weather forecasting system will help make renewable energy production more feasible and profitable.

This will encourage development of economically beneficial, carbon-free, secure energy systems.

Reliable Wind Forecasts

Improving NOAA's wind forecasting would:

- **Hasten the deployment** of wind energy by helping balance energy supply and demand on the grid
- **Provide the nation** with consistent resources for wind information

NOAA could contribute by developing:

- **Wind energy testbeds**, to improve fundamental understanding of physical processes affecting wind
- **Higher resolution models**, for more detailed and reliable wind forecasts
- **New instruments**, observational strategies, and visualization tools



Intelligent Grid Use

NOAA could contribute by incorporating impacts of solar storms on the electric grid, especially as the grid is modernized into the Smart Grid

Precise Solar Predictions

Honing NOAA's solar forecast would:

- **Enhance** data used to evaluate current and future solar resources
- **Improve** cloud forecasts
- **Assimilate** aerosol and surface-reflectance data into forecast models
- **Develop** seasonal forecasts to address regional solar energy potential
- **Incorporate** the effects of solar storms on the electric grid
- **Provide the nation** with consistent resources for solar information



Impacts of Climate and Renewable Energy

NOAA can increase understanding of the reciprocal relationship between renewable energy and the environment:



- **Improve** understanding of the potential impacts of solar and wind farms on the environment—including weather and climate—across a range of spatial and time scales
- **Provide** information about how the changing climate may affect renewable energy farms, including products to help optimize farm operations
- **Determine** if large scale climate drivers such as the El Niño Southern Oscillation (El Niño) affect variability in renewable resources

Ocean Energy

NOAA can support ocean-based renewable energy technologies as they are developed:

- **Offshore** wind energy
- **Hydrokinetic** energy
- **Ocean thermal** energy conversion
- **Monitoring** the impacts of renewable energy deployment on local climates and ecosystems

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