Hybrid Generation Simulator
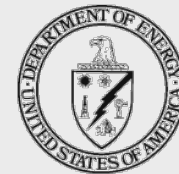## *HybSim© 1.0*

DAVID TRUJILLO
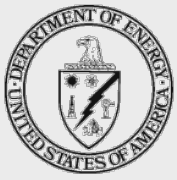
SANDIA NATIONAL LABORATORY

Presented by

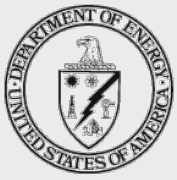**Joshua Bartlett – University of Michigan**

Sandia National Laboratories

Introduction

- **HybSim© 1.0 copyrighted 2006**

- **First license to University of Michigan**

Introduction

HybSim© Model

What – "Hybrid Simulator"; Tool designed to evaluate the <u>economic</u> **and** <u>environmental</u> **benefits of adding** <u>renewable</u> **energy to the fossil fuel generation mix in** <u>remote</u> **and difficult-accessible locations.**

Why – Benefits of energy storage, decision analysis, risk analysis, load growth issues, load management, economic analysis, planning (what-ifs)

Who - Availability to coops, field techs, project managers, administrative personnel

Where – Remote villages, military installations, remote industrial systems; any climate

How - Designed for simplicity of use, Windows OS, open MS Excel executables, imbedded libraries for batteries, gensets, PV systems, reports, modulated design for expansion – wind energy to be added in '06
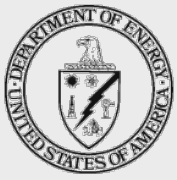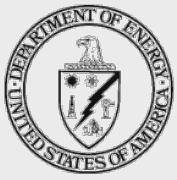
HybSim© Model – Application

- **Primarily established to help technical and non-technical personnel <u>reduce</u> the "guess work" on the benefits of energy storage and renewable hybrid options for existing or new systems.**

- **<u>Not</u> intended to <u>emulate the exact response</u> of the components.**

- **Variance in component response expected.**

HybSim© Model – User GUI

Note:

Green boxes are *essential data*. The model will not run without these values being entered into the program.
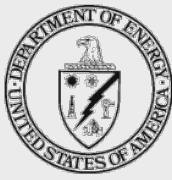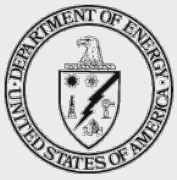
HybSim© Model – Help Feature

Model Validation – Aerial Site View
Carol Springs, Arizona, APS
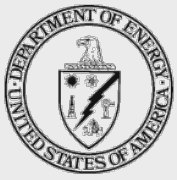
Current Work

- **Not funded at this time**
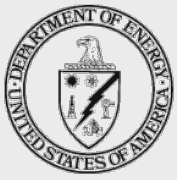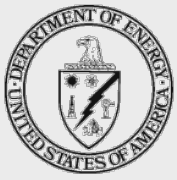
Future Work

- **Add wind energy technologies as an option – size <u>restricted to less</u> than 100 kW**

- **Distribution**
  - **Alaska users, utilities, coops, project managers, universities**

Acknowledgements

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