

Tools for Microgrid Planning, Design, and Control

1. **Energy Surety Microgrid (ESM)**

Planning & Design – Methodology

A design methodology that links energy surety with critical power needs

About:

<http://energy.sandia.gov/energy/ssrei/gridmod/integrated-research-and-development>

2. **Microgrid Design Toolkit (MDT)**

Planning & Design – Tool

The Microgrid Design Toolkit is a decision support software tool for microgrid designers in the early stages of the design process.

About:

<http://energy.sandia.gov/energy/ssrei/gridmod/renewable-energy-integration/smart-grid-tools-and-technology>

This site provides links to the fact sheet and the tool

Download:

<http://energy.sandia.gov/energy/ssrei/gridmod/renewable-energy-integration/smart-grid-tools-and-technology> and select the Microgrid Design Toolkit Link

3. **Distributed Energy Resources – Customer Adoption Model (DER-CAM)**

Planning & Design—Optimization

DER-CAM handles two fundamental microgrid problems: 1) Investment & Planning-Optimal energy supply solutions for buildings and microgrids and 2) Operations-Optimal dispatch of existing energy supply technologies in buildings and microgrids.

About:

<https://building-microgrid.lbl.gov/projects/der-cam>

Tutorial:

<https://building-microgrid.lbl.gov/tutorial-movies-and-manual-full-der-cam-web>

Download:

<https://building-microgrid.lbl.gov/projects/how-access-der-cam>

4. **Remote Off-Grid Microgrids Design Support Tools (ROMDST)**

*Planning & Design—**Prototype Under Development** By Lawrence Berkley National Lab*

Adapt the DER-CAM Model to develop an optimization-based design support tool for off-grid microgrids, considering power flow to determine the optimum mix of DERs.

About:

<http://energy.gov/oe/articles/oe-announces-awardees-under-remote-grid-microgrid-design-support-tool-research-call>

5. **Microgrid Assisted Design for Remote Areas (MADRA)**

Planning & Design—Prototype Under Development By Oak Ridge National Lab

A comprehensive design support tool for supporting the cost-effective design of off-grid AC and DC microgrids in remote areas.

About:

<http://energy.gov/oe/articles/oe-announces-awardees-under-remote-grid-microgrid-design-support-tool-research-call>

<https://www.ornl.gov/news/your-own-energy-island-ornl-microgrid-could-standardize-small-self-sustaining-electric-grids>

6. **Smart and Green Energy (SAGE)**

Operations & Maintenance

SAGE is decision support for operations and maintenance (DSOM) software system. It examines technologies to improve energy efficiency and reduce the quantity of fuel needed to operate base camps.

About (final report):

http://www.pnnl.gov/main/publications/external/technical_reports/PNNL-23133.pdf

7. **Controllers for Commercially Viable Microgrids**

Control – Under development

Advance microgrid system designs and control functionalities to support achievement of DOE program targets and community-defined resilience objective

About:

<http://www.energy.gov/articles/energy-department-announces-8-million-improve-resiliency-grid>

8. **Complete System Level Efficient and Interoperable Solution for Microgrid Integrated Controls (CSEISMIC)**

Control – Under development

CSEISMIC is the development of Microgrid and device controllers to ensure stable and efficient operation of an inverter based microgrid.

About:

<http://web.ornl.gov/sci/renewables/docs/factsheets/CSEISMIC-factsheet.pdf>