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# HOMER<sup>®</sup> Pro

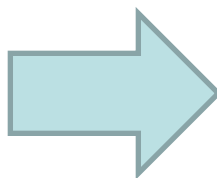
November 17, 2015

**Dr. Peter Lilienthal**

# The Future of Power

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Clean, distributed power with hybrid renewables and smart micro-grids



HOMER is the key to unlocking that future

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# Which combination will pay off?

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Solar

Fuel Cells

Wind

Hydro

Micro-turbines



Geothermal

Micro-grids

Biomass

Demand Response

New Storage Techs.

Load Management

Electric Vehicles

Smart grids



# It Depends on:

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Resources



Loads



Fuel & Equipment prices

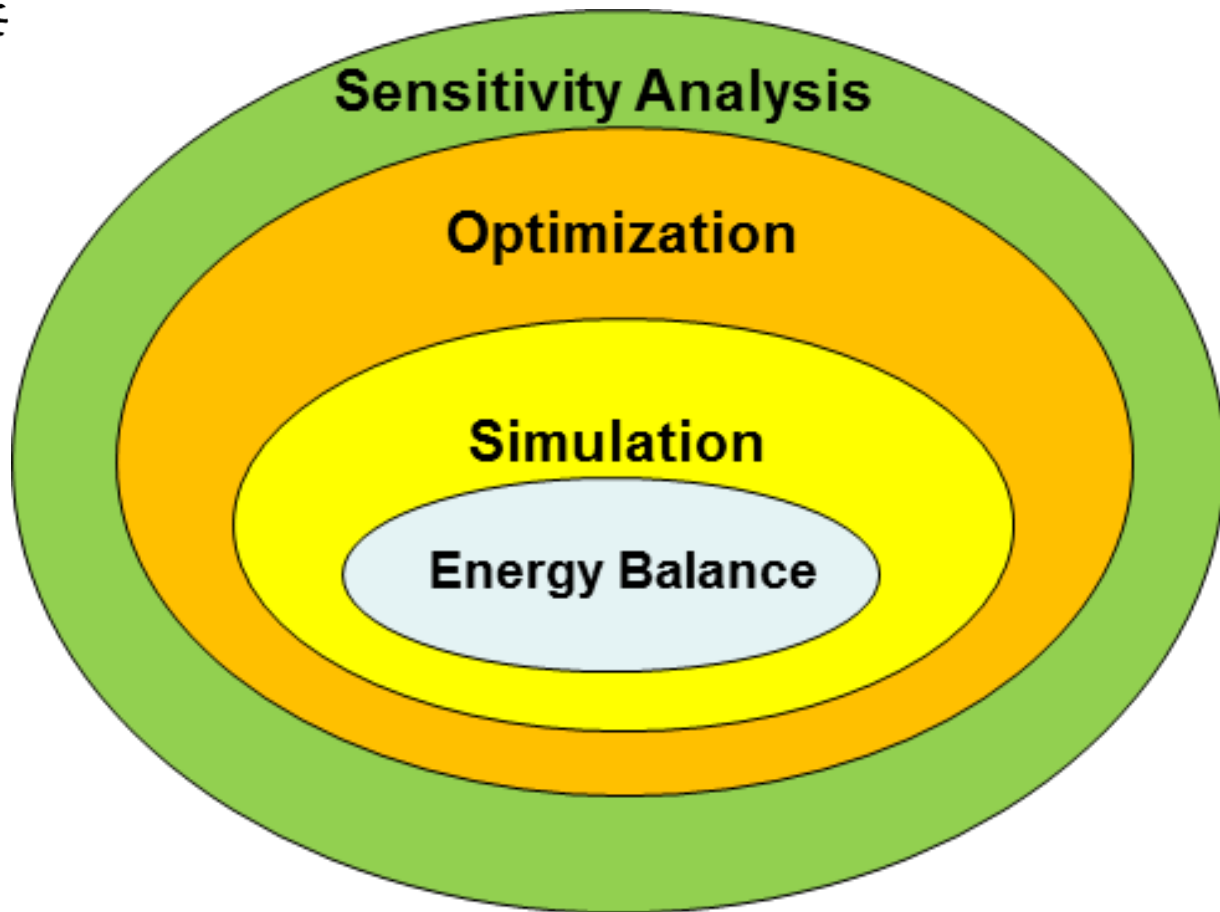
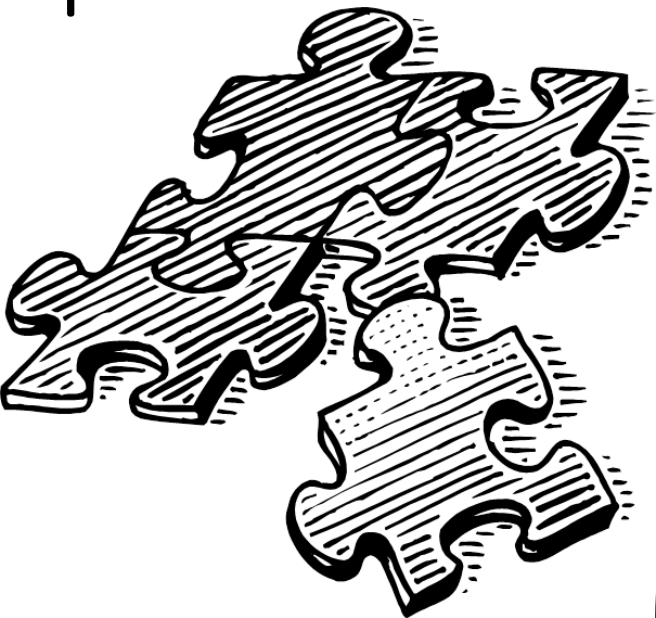


Equipment performance

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# HOMER Fits the Pieces Together

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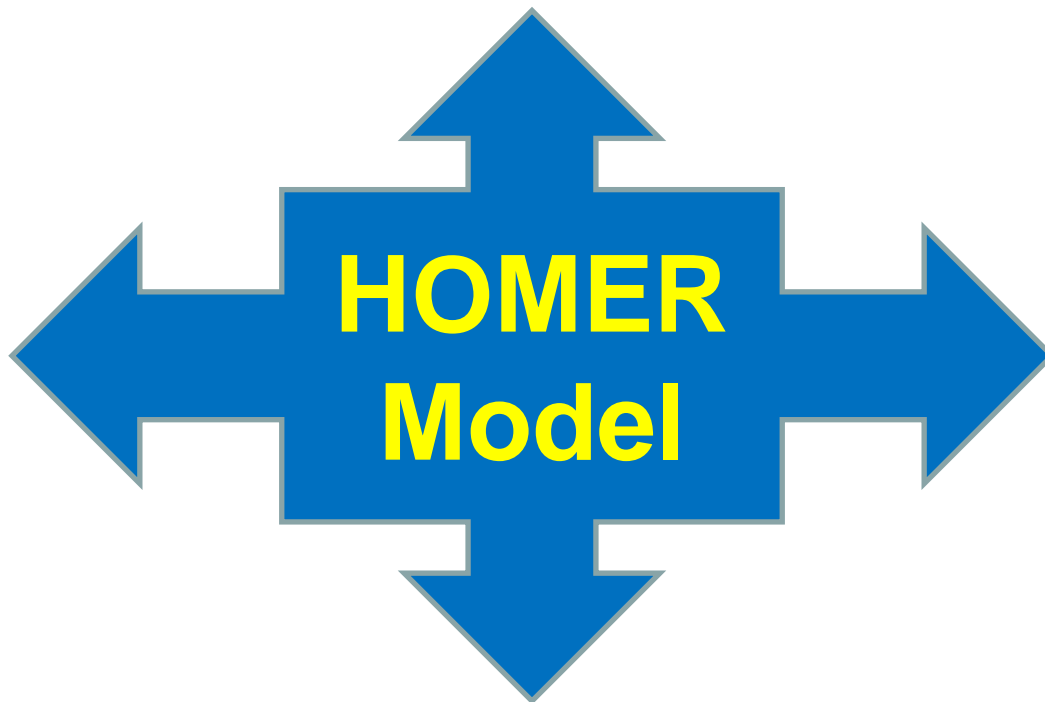


# HOMER bridges different worlds

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Renewable Advocates

Power  
Engineers



Financiers

Utility Operators

**HOMER as a communication tool**

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# History

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- 1992: US National Renewable Energy Laboratory
  - Research tool for Village Power
- 1998: Started distributing over the web
- 2001: Expanded to larger systems
  - Islands and grid-connected systems
- 2009: Spun off to HOMER Energy
- 2014: Released HOMER Pro
- 2015: 135,000 users in 193 countries

# Global Standard

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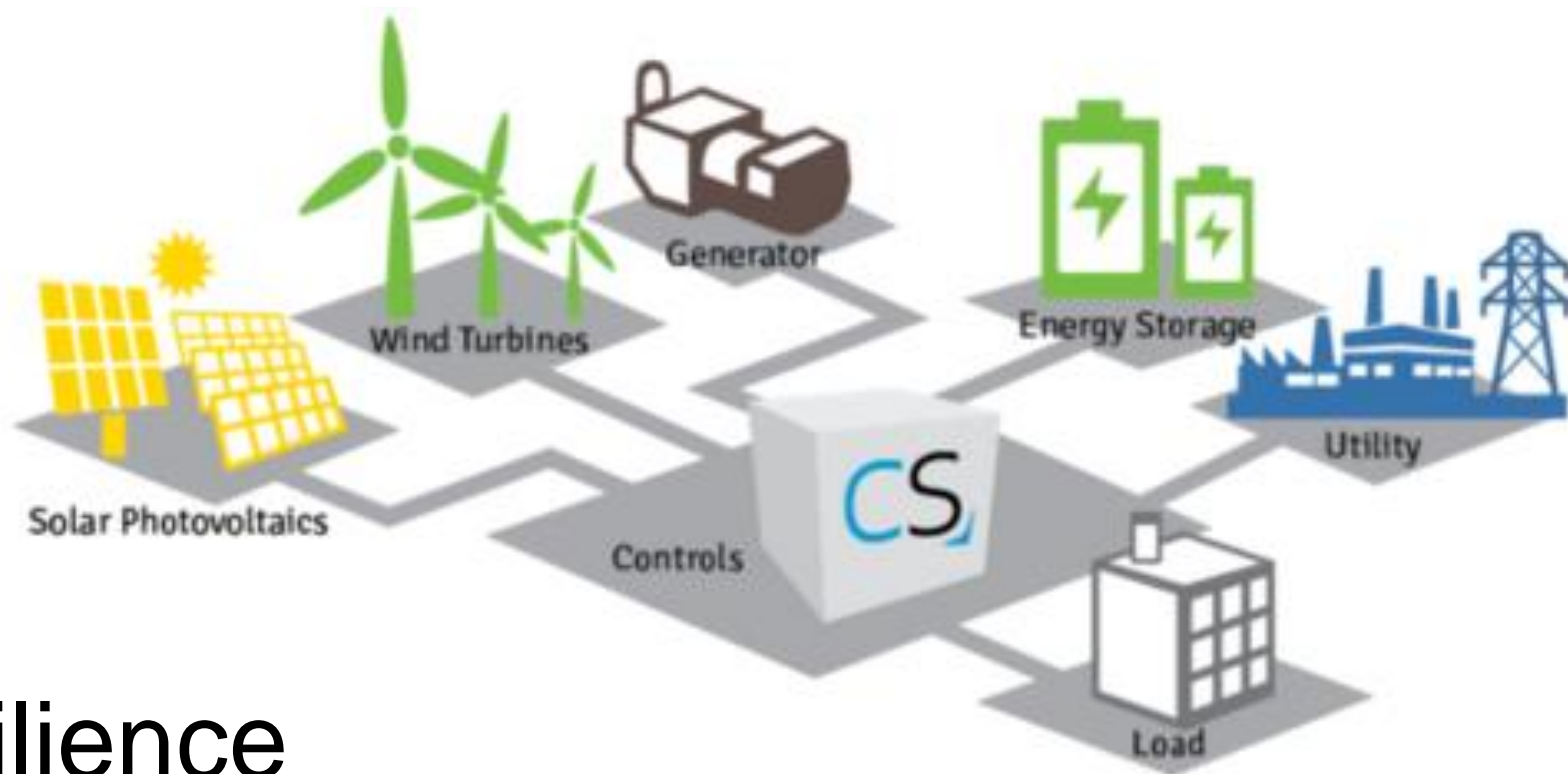
- 65,000 subscribers to monthly newsletter
- Required by funding agencies and development banks

*“We spent a lot of money developing our own model, but threw it away because everyone kept asking for our HOMER results.”*

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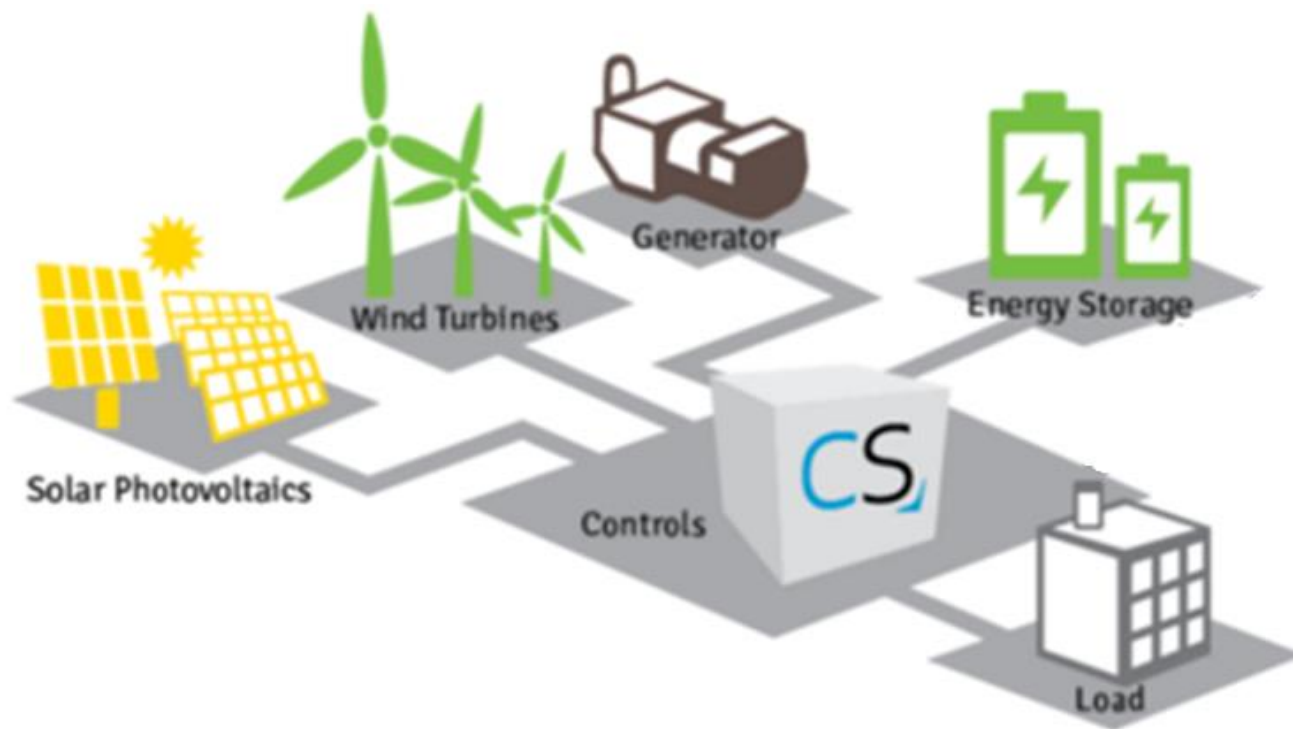


# Grid-connected Market



- Resilience
- Aging or inadequate infrastructure
- High penetration renewables

# Off-grid and Island Microgrids

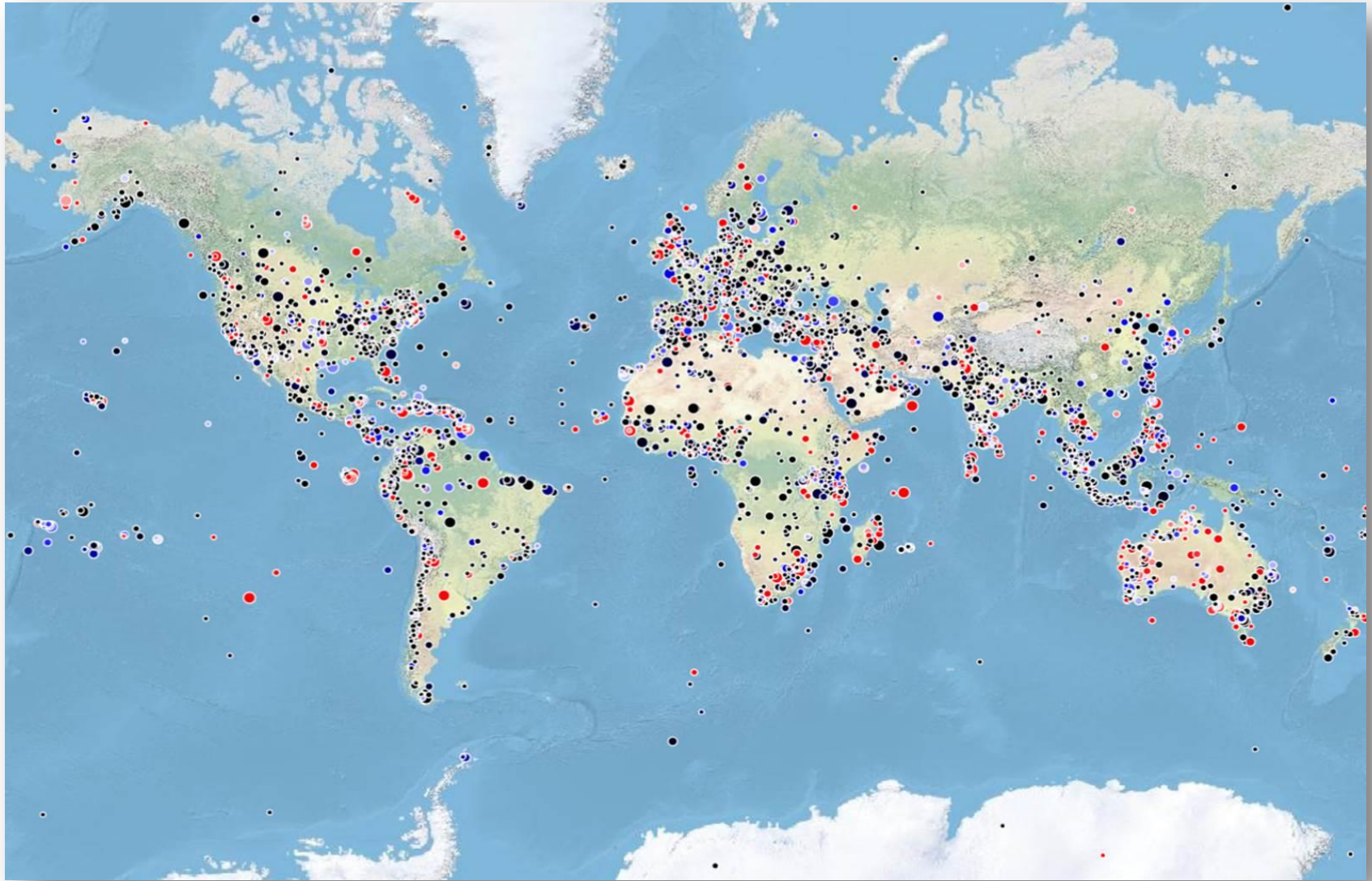


1.3 billion unelectrified people

Billions more underserved

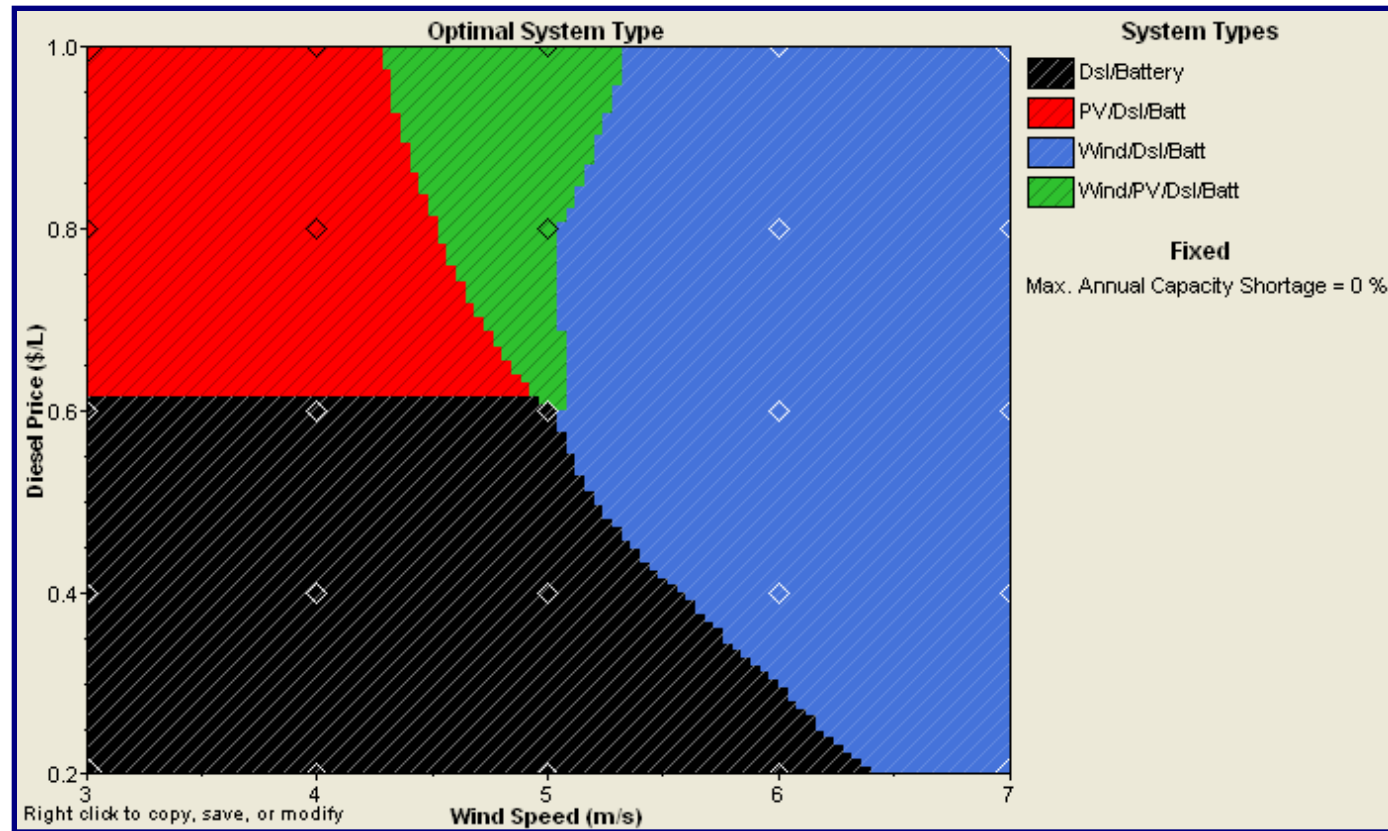
Hundreds of thousands of potential projects

# Where is HOMER used?



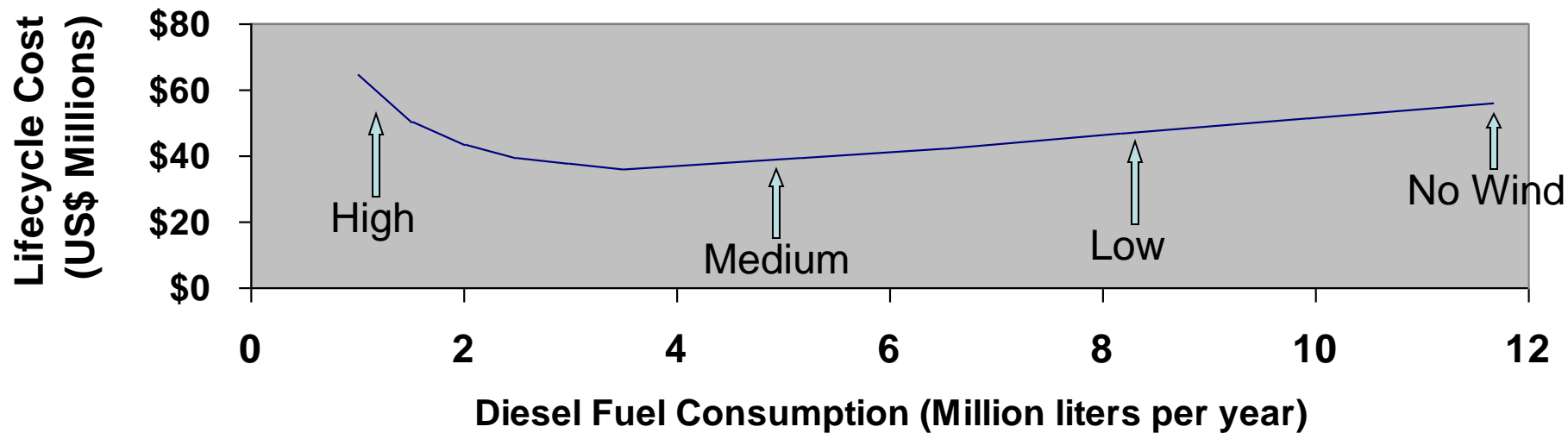
# Optimal System Design

- What kind of system is best under which conditions?

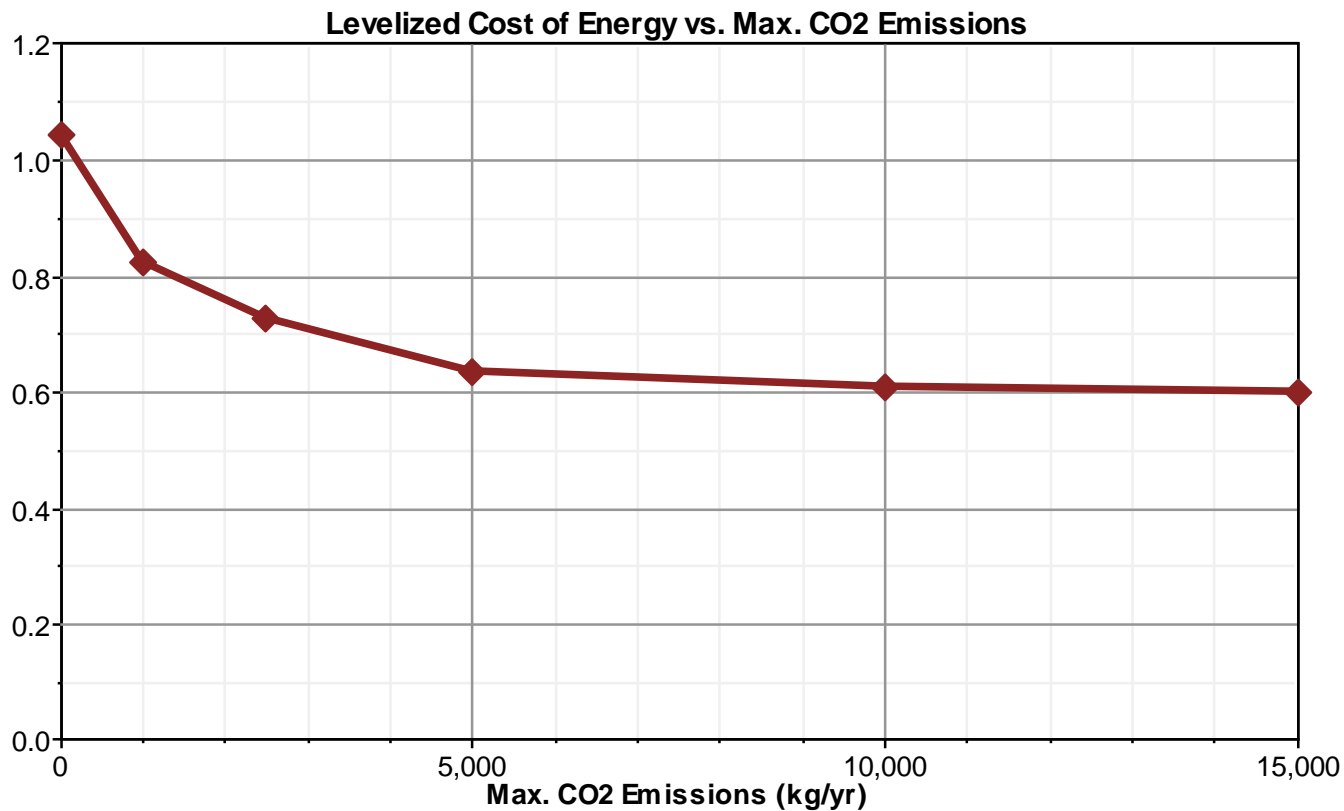


# Penetration Analysis from HOMER

**Molokai** (8.3 meter per second wind resource)

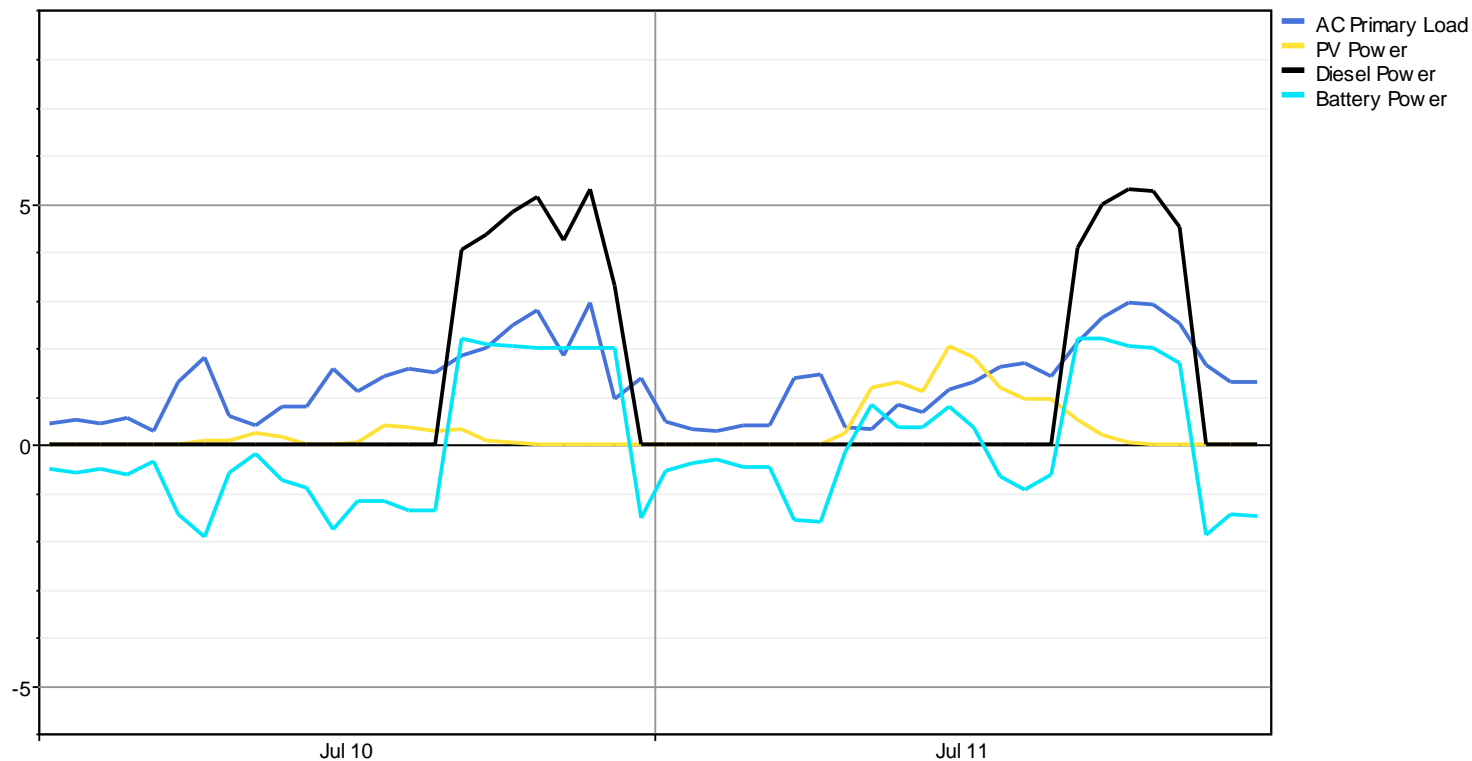


# Policy Analysis



- Cost of emission constraints

# Operational Analysis



- When is backup power needed?

# 2016 Software Roadmap

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- New releases every quarter
    - APIs
    - New optimization algorithms
  - Creating sales tools for Fortune 100 Clients
    - ABB and others
  - New versions
    - French & Spanish versions
    - Marine Corps version
    - SaaS-based Quickstart
  - Certification program
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# Industry Partner Program

