



Energy Master Planning for Resilient Public Communities

Virtual Training

October 13-16, 2020



The National Academies of
SCIENCES • ENGINEERING • MEDICINE



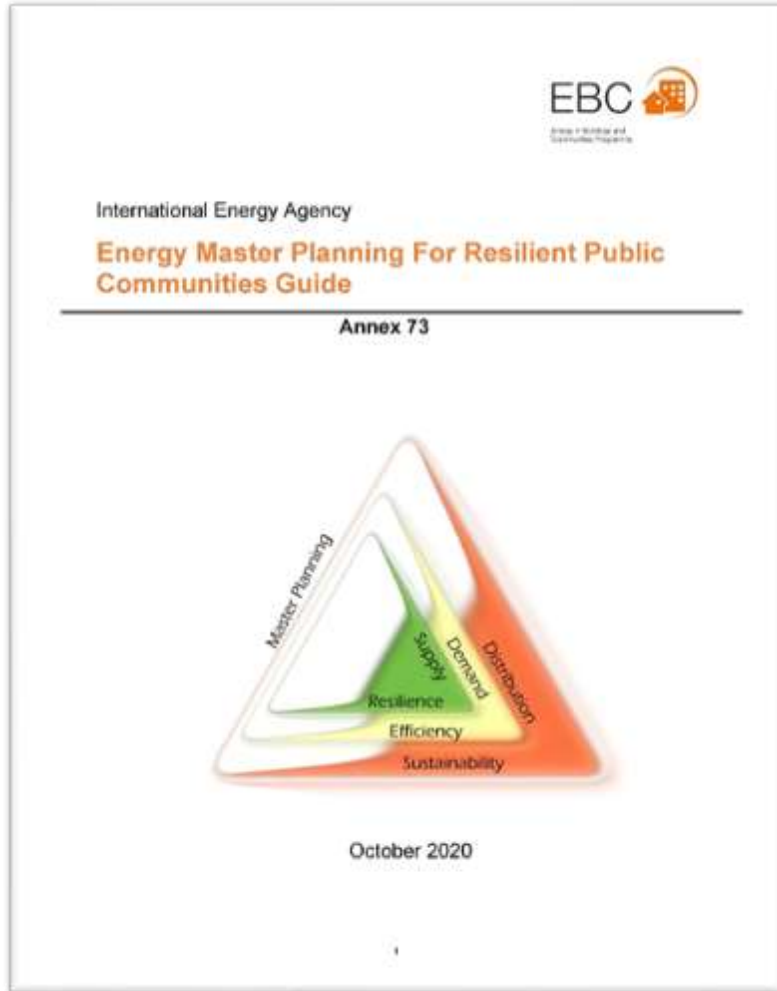
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Background

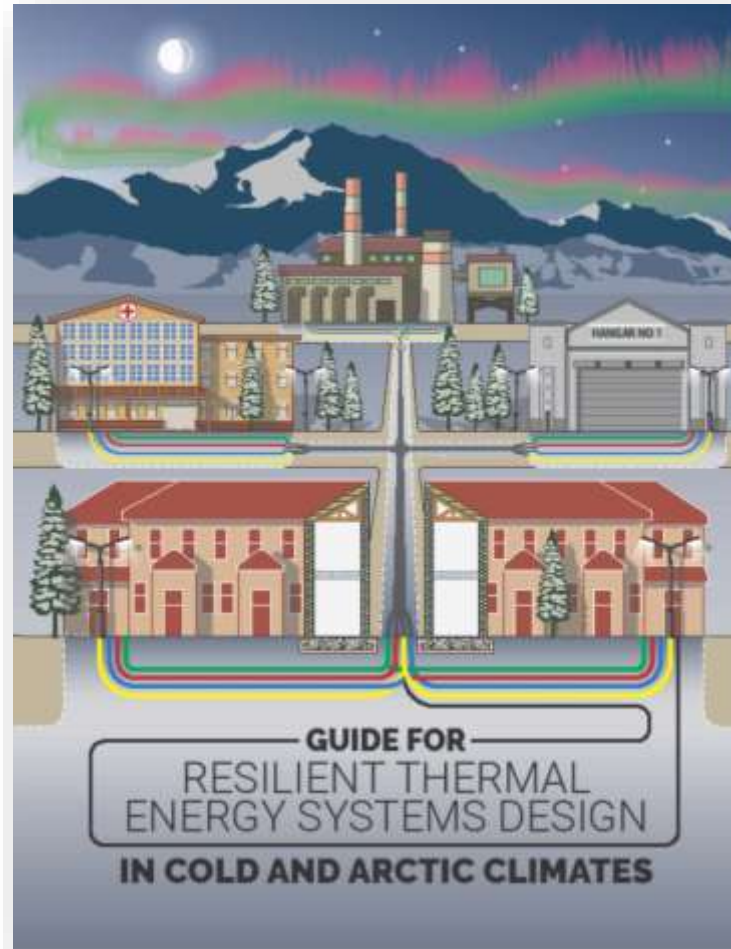
This training is based on research conducted under:

- Department of Defense Environmental Security Technology Certification Program EW18-D1-5281: “Technologies Integration to Achieve Resilient, Low-Energy Military Installations”;
- International Energy Agency Energy in Buildings and Communities Program Annex 73 “Energy Master Planning for Resilient Public Communities”;
- The Office of the Deputy Assistant Secretary of the Army project “Analysis of energy requirements and technical, resilience and economical evaluation of energy supply solutions to mission critical facilities “ and Building Envelope and Thermal Energy Systems Resilience for Cold Climates”, and
- U.S. Army Program 633734T1500, Military Engineering Technology Demonstration

Training Materials



~550 pages



~150 pages

Training Content Contributors

8 countries and 36 organizations



Training Objectives

This training is designed to support energy managers, community planners and their contractors with developing community energy plans and provide better understanding of how to integrate energy systems resilience requirements into these plans. Upon completion of this training, participants will be able to:

- **Understand differences between energy goals, requirements, targets and energy constraints;**
- **Formulate the scope and boundaries of energy master plan;**
- **Define the baseline, base case and alternatives to be selected from for the ultimate energy master plan;**
- **Understand the concept of energy systems resilience, establishing resilience requirements and how to integrate them into energy master planning framework;**
- **Learn about variety of electric and thermal energy system architectures, their pros and cons, and variety of technologies they may be comprised of;**
- **Understand capabilities of tools supporting community level energy master planning process and energy systems resilience analysis;**
- **Define requirements to resilience of thermal energy system in extreme climates and understand major factors affecting these requirements;**
- **Explore different implementation strategies, business and financial models; and**
- **Gain knowledge from case studies describing best practices from around the world.**

Agenda – all times EDT

- **Session 1: Energy Master Planning and Resilience Analysis**
Tuesday, October 13, 2020, 10:00 a.m. – 3:00 p.m.
Breaks: 12:30 – 13:30 p.m.
- **Session 2: Energy Systems Architectures, Technologies, and Modeling Tools**
Wednesday, October 14, 2020, 10:00 a.m. – 3:00 p.m.
Break: 12:10 – 1:00 p.m.
- **Session 3: Thermal Energy Systems Resilience in Extreme Climates**
Thursday, October 15, 2020, 10:00 a.m. – 3:00 p.m.
Break: 12:05 – 1:00 p.m.
- **Session 4: Case Studies; Implementation: Business and Financial Models**
Friday, October 16, 2020, 10:00 a.m. – 3:30 p.m.
Break: 12:05 – 1:00 p.m.

Welcome to Virtual Training Workshop



Agenda for October 14, 2020



Session 2. Part 1. Energy Systems Architectures and Technologies



- **Energy Supply System Architectures.** Ms. Susanne Ochse, Diplom-Ingenieur, GEF Ingenieur AG
- **Microgrids.** Mr. Ben Shenkman, R&D Electrical Engineer, Sandia National Laboratories
- **District Energy—The Resilient Infrastructure.** Dr. Oddgeir Gudmundsson, Director, Danfoss A/S
- **Energy Technology Database.** Mr. Anders Dyrelund, Senior Market Manager, Ramboll Group A/S

Application

- **Adequate interpretation** for analysis and modeling of
 - Baseline and
 - Base Case, and
- **Inspiration for selecting**
 - Alternative designs