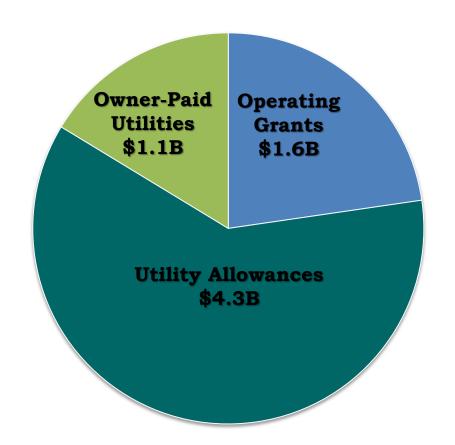
HUD Executive Actions on Energy and Green Building in Affordable Housing

The Federal Renewable Energy Target

HUD ASSISTED
RENTERS AND OWNERS
SPEND MORE THAN

\$7
BILLION
A YEAR ON UTILITIES



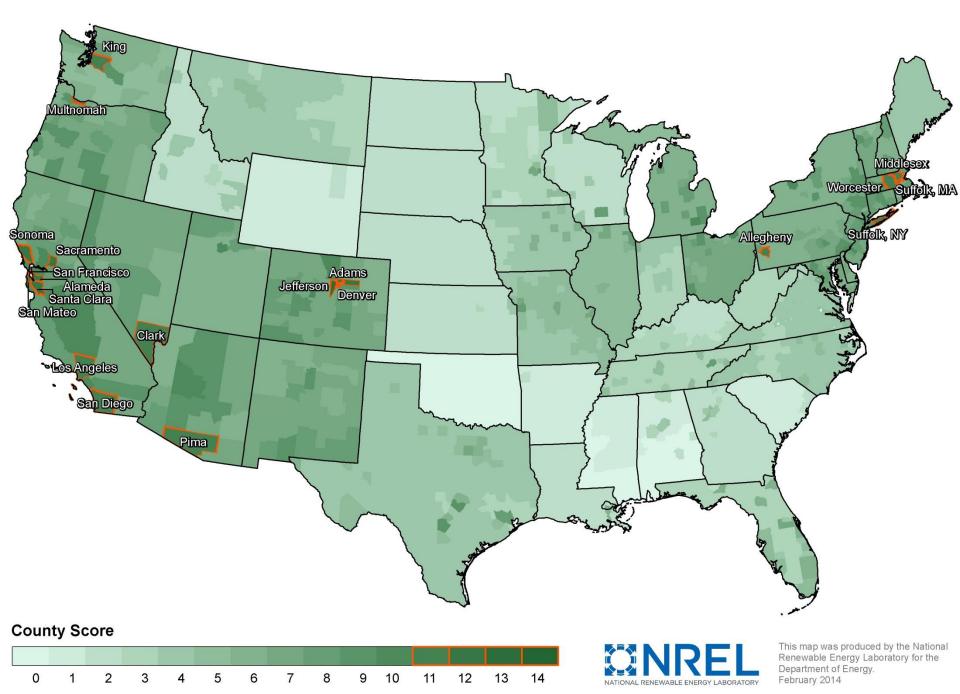
A 5% reduction of energy usage could save \$350 million a year, or \$1.75 billion over 5 years.

Renewable Energy Target for Federally Subsidized Housing

100 megawatts of installed renewable capacity on-site at federally subsidized housing by 2020

- ✓ Triple on-site production on HUD's Public Housing and Multifamily Assisted properties, USDA Rural Development, and Low Income Housing Tax Credit units
- ✓ expand the renewable energy sector
- ✓ promote climate resilience and cost effective distributed generation in low income housing
- ✓ curb carbon emissions
- ✓ tools like Power Purchase Agreements make it possible

Photovoltaic Solar Resource: United States - Spain - Germany Annual average solar resource data are for a solar collector oriented toward the south at a tilt = local latitude. The data for Hawaii and the 48 contiguous states are derived from a model developed at SUNY/Albany using geostationary weather satellite data for the period 1998-2005. The data for Alaska are derived from a 40-km satellite and surface cloud cover database for the period 1985-1991 (NREL, 2003). The data for Germany and Spain were accusing from the Joint Research Centre of the European Commission and is the yearly sum of global imadation on an optimally-inclined surface for the period 1981-1990. States and countries are shown to scale, except for Alaska. Mainland United States Spain: **Set Lave City** · Cheyertee · Fact Calific · Delve ★ Cotorado Springs Barcetona Barriefe Ostanoma Gry. · Life for Wights Palls Birmegnan Alaska Ветру Germany United States Ollandia Neri te Souloi orgue Christi Th.nn Brownside Hawaii United States Hawaii USA Alaska USA Spain Germany Mainland USA kWh/m²/Year This map was preduced by the April 18: 2008 Author: Elify J. Pobarto National Ferendole Dremy Laboratory for the LB Experiment of Energy WAR THE BUILDING



Top 20 counties outlined in orange (scores 11 - 14)

- 73-unit senior housing project
- First NetZero, Fossil Fuel Free, **LEED Platinum senior housing** project in the U.S.
- **Energy efficiency strategies:**
 - o passive systems
 - active mechanical systems
- Renewable energy systems:
 - solar and wind energy



387 buildings; 668 units

2.5 MW; 10,471 panels

FINANCIAL DETAILS

- Cost: \$ 10 million
- \$185,000/yr PPA payments

Project Financing:

Power Purchase Agreement

20 year term with purchase option

Leveraged Resources:

- Federal Investment Tax Credits
- - Utility Rebates
- Qualified Energy Conservation Bonds

Denver Housing Authority Denver, Colorado



Financing Hurdles and Opportunities

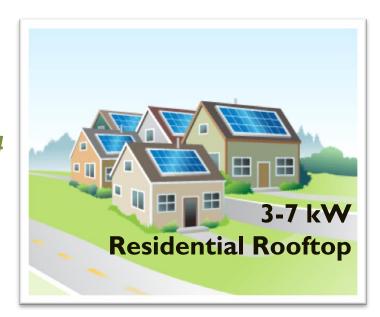
- Lack of upfront capital and financing options
- Lender Risk and Administrative Burdens

Opportunities

- Enable Power Purchase and Lease Agreements
- Work with CDFIs to create energy loan funds and match demand with financing supply opportunities
- Loan guarantees for renewable energy projects within targeted energy districts
- Energy Efficiency Conservation Loan Program
- Crowdsourcing

Rooftop & Utility-Scale Solar

Rooftop solar is an option for less than 1/4 of the residential market



Only 22-27% of residential rooftop space is eligible*

- Structural constraints
- Insufficient roof space
- Shading

Does not account for:

- Ownership/renters
- Financial situation







Image credit: Mosaic

Have the opportunity to:

- Restructure (and reduce) soft costs
- Increase access to solar

According to DOE's SunShot
Initiative, developing shared solar
business models can quadruple
the impact of related funding and
solar deployment efforts

http://www1.eere.energy.gov/so lar/sunshot

Community and Shared Solar Opportunities

Contact Information

Crystal Bergemann
Office of Sustainable Housing and Communities
Washington, DC
Crystal.A.Bergemann@HUD.gov