Today’s Presenters

Ruth Ann Norton
Green & Healthy Homes Initiative

Erika Symmonds
GRID Alternatives
How Energy Efficiency is Improving Health, Economic, and Social Outcomes
Ruth Ann Norton
Green Jobs & Resident Health
How Energy Efficiency is Improving Health, Economic and Social Outcomes

Ruth Ann Norton
President and CEO
May 10, 2016
Better Buildings Challenge Summit
Our Mission

To break the link between unhealthy housing and unhealthy children
Green & Healthy Homes Initiative – our history

1986
Volunteer Effort
Parents Against Lead

1993
Coalition to End Childhood Lead Poisoning

2009
Became the Green & Healthy Homes Initiative

Accomplishments

• Designed the efforts for the 98% reduction of lead poisoning in Maryland
• 30 successful lead poisoning prevention legislative measures
• First Housing Choice Voucher Program for Lead
• 25 GHHI sites working to address lead through holistic housing approach
• Over $300 million raised to eradicate lead and other environmental health threats
The GHHI “No Wrong Door” Model

- Single Intake System
- Comprehensive Assessment
- Coordinated Services
- Integrated Interventions
- Cross-Trained Workers
- Shared Data

- Lead Hazard Reduction
- Asthma Trigger Control
- Fall/Injury Prevention
- Energy Efficiency
- Weatherization
GHHI Model - Cross Trained Inspectors and Contractors

- Healthy Home Evaluator (HHE) Credential

- Cross Training of Contractors and Inspectors From Multiple Fields to Increase Ability to Deliver Comprehensive Interventions

- Increased Contractor and Inspector Capacity

- Development of Green Trades Accreditation

- Job Training and Economic Development for Residents of Low Income Communities
BPI Healthy Homes Evaluator Micro-credential

• Developed by the Building Performance Institute, Green & Healthy Homes Initiative (GHHI) and other key partners in the field

• Released in April 2016

• Cross training energy auditors on home-based environmental health hazard assessment, scope writing and intervention best practice protocols

• Supports the further integration nationally of Healthy Homes interventions with weatherization/energy efficiency intervention funding streams
The Need and the Opportunities for the new BPI Healthy Homes Evaluator Credential

A. New Local Procurement Requirements

B. Comprehensive Green & Healthy Homes Approach

C. Innovative Funding Sources

D. Pay For Success/Social Impact Bonds

E. Other Emerging Markets (Aging in Place, Private Market Demand)
## Comprehensive Housing Interventions

<table>
<thead>
<tr>
<th>Health &amp; Safety</th>
<th>Green / Energy Efficiency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asthma Trigger Reduction</td>
<td>Energy Audit</td>
</tr>
<tr>
<td>Lead Hazard Reduction</td>
<td>Weatherization</td>
</tr>
<tr>
<td>Health &amp; Safety Assessment</td>
<td>Insulation</td>
</tr>
<tr>
<td>Integrated Pest Management</td>
<td>Reducing Air Infiltration &amp; Leakage</td>
</tr>
<tr>
<td>Trip &amp; Fall Risk Reduction</td>
<td>Venting</td>
</tr>
<tr>
<td>Fire &amp; Injury Prevention Measures</td>
<td>Remediating Gas Leaks &amp; CO</td>
</tr>
<tr>
<td>Health &amp; Safety Education</td>
<td>Energy Efficiency Education</td>
</tr>
<tr>
<td>Mold Remediation</td>
<td></td>
</tr>
</tbody>
</table>
Integrated Interventions and Non Energy Benefits

Leverage funding to address environmental health hazards and energy loss leads to greater Non-Energy Benefits:

- Fire and Carbon Monoxide Safety
- Reduced Environmental Toxins
- Reduced Thermal Stress
- Better Indoor Air Quality
- Improved Health Outcomes
- Economic Stability
Financial burden of unhealthy housing

Nine Million families live in unhealthy homes

Costing Taxpayers Billions Annually

• $19B = trip and fall injuries for seniors
• $43.4B = lead poisoning
• $50.1B = asthma

• 40% of emergency department visits and hospitalizations for asthma are caused by unhealthy housing conditions such as extreme heat and cold and poor indoor air quality
Asthma

- 25 million Americans with current asthma diagnosis including 6.8 million children
- Asthma rates are increasing annually
- 1 in 10 children and 1 in 12 adults have asthma
- 3,500 asthma related deaths annually
- Asthma accounts for over 15 million doctor visits, and nearly 2 million ER visits each year
- 14.4 million missed school days from asthma
- 14.2 million missed work days from asthma
Health impact and benefits of GHHI

• Impact on asthma:
  o 67% reduction in asthma-related client hospitalizations
  o 28-60% reduction in asthma ER visits
  o 50% increase in participants never having to visit the doctor’s office due to asthma episodes
  o 62% increase in participants reporting asthma-related perfect attendance for their child (0 school absences due to asthma episodes)
  o 85% increase in participants reporting never having to miss a day of work due to their child’s asthma episodes
  o Major reduction in housing turnover: 6% versus 36% Annually

• Peer-reviewed and published in Environmental Justice Journal
Evidence: National Evaluation of the Weatherization Assistance Program

- ORNL ARRA study (2010) estimated present value Energy Savings of $3,190 and including Non-Energy Benefits for a Total Savings of $13,167 per Weatherized Home with average Total Cost of $6,812
- SIR of 0.9 Energy Benefits compared to Total Savings/Total Cost with Return on Investment of 1.93
- Reduced asthma symptoms: ED visits and hospitalizations
- Reduced thermal stress
- Reduced CO poisonings and fire mortality
- Improved mental & physical health
- Budget issues (utility, food, medical, housing, etc.) reduced post-weatherization. Important connection between budget problems and ‘trade-off’ in dealing with health and other priorities
- Improved school and work attendance
GHHI National Outcomes

Over 510,000 GHHI influenced green and healthy units

- Integration of weatherization/energy efficiency with Healthy Homes, lead hazard reduction, and housing rehabilitation
- $400 to $700 average annual reduction of energy costs
- 20% decrease in costs to government programs
- Cornell/CEO Buffalo Study: $4K - $8K increase in wages
- GHHI standards recommended by US Conference of Mayors and Federal Interagency Work Group on Healthy Housing
Family Outcomes

Veal Family – 612 Curley Street

Pre-Intervention Situation:
• Allergens (mold, mice, VOCs, poor IAQ)
• Significant lead hazards in the home
• Poorly weatherized but deferred by WAP Program
• Malfunctioning furnace – Heating with kitchen stove
• 2 children w/asthma – Hospitalizations/missed school days

Interventions: New furnace (Constellation Energy); Weatherization (City WAP); Lead Hazard Control (CECLP HUD); Moisture Control/Mold (CECLP HUD, Foundations); Healthy Homes (CECLP HUD/CDBG); Client Pre-Post Education (CECLP, Hopkins)

Intervention Cost: $18,780  Integrated Approach Savings: $2,958

Outcomes:
✓ No repeat hospitalizations or missed school days due to asthma episodes
✓ Lower energy and maintenance costs
✓ Youngest child’s school performance has improved from being a “C” student to an “A” student post intervention
Family Outcomes

Smith Family - 5004 Alhambra Avenue

Pre-Intervention Situation:
- Family of four with a son who has severe asthma
- History of repeated asthma episodes resulting in hospitalizations on average of three times per year since birth (Average stay: 1 week)
- Deteriorated, lead hazardous windows; high dust mite levels; mouse infestation; lack of venting; high VOC usage; poorly weatherized

Costs: $12,256 – GHHI Savings $2,159

Partners: HUD OLHCHH, MEA, CDBG, CSBG, Foundations

Results: Allergens and lead hazards remediated; Home weatherized

Outcomes:
- Son was not hospitalized due to asthma triggers in the home in the 12 months post-intervention
- Annual energy cost savings of $721
- **Avoided medical costs of $48,300 in first year alone**
New Avenues for Funding

- Medicaid Reimbursement
- Public Service Commission Funds
- AG Settlement Funds
- Hospital Community Benefit Funds
- Pay for Success
Hospital Community Benefit Investments

- Community Benefits traditionally used for uncompensated care

- AHA reported in 2010 that hospitals provided benefits valued at over 11% of expenses, with uncompensated care and financial assistance to patients averaging 5.7%. Adding in health professions education and medical research brought this up to 8.2%.

- VT has state requirements for non-profit hospitals

- “Community building activities” only made up 0.1-1% nationally
Pay For Success / Social Impact Bonds
3 asthma projects developing – Fresno, Alameda, and Baltimore

Funder (Investor and Guarantor)

Independent Evaluator

Service Provider (Intermediary may manage providers)

Payor / Saver (Government or private sector)

$ upfront costs

$ savings from outcomes

$ repayments including ROI for meeting agreed upon outcomes
Ruth Ann Norton
President and CEO
410-534-6477
ranorton@ghhi.org
Twitter: @RuthAnnNorton
GHHI Twitter: @HealthyHousing
www.ghhi.org
Generating Healthier Communities: Leveraging Solar Energy to Improve Individual, Community, and Environmental Health
Erika Symmonds
Generating Healthier Communities

Leveraging Solar Energy to Improve Individual, Community, and Environmental Health
GRID’s Vision and Mission

Vision: A successful transition to clean energy that includes everyone

Mission: Make renewable energy technology and job training accessible to underserved communities

Triple Bottom Line

People
Economic Empowerment

Planet
Environmental Justice

Employment
Workforce Development
Who is GRID?

GRID Alternatives is a non-profit solar installer.

Our work is made possible by:
• Volunteers
• Homeowners
• Strategic Partnerships
1. Greater EE means less RE deployed

2. Renewables lend themselves to distributed generation – less lost in transmission

3. No combustion by-products like wasted heat

4. EE and RE are encouraged as a combined package for decreasing the energy waste and carbon production of buildings.
GRID’s Growing Impact

- 6,659 Systems Installed
- 22,796 kW Installed
- 178 M in Long-Term Savings
- 25,885 Volunteers Trained
- 503,147 tons GHG prevented
GRID Alternatives History

2001: Founded by Erica Mackie and Tim Sears

2004: First install – San Francisco, California

2005-2011: Expanded to 7 California offices, serving the entire state

2012: Expanded to Colorado

2013: Expanded to New York Tri-State region

2014: Expanded to Mid-Atlantic region and Nicaragua

2015: Launched RISE Initiative and expanded National Tribal Program
GRID Provides:

- PV System Funding
- System Design/Engineering
- Building Permits
- Installation
- Utility Interconnection
- Energy Efficiency audit & referrals
- Client education & follow-up
  - 10 year labor warranty
  - 10-25 year equipment warranty
- Workforce development
Our Work

Programmatic Work

• Single-Family
• Multi-Family
• SolarCorps Fellowships
• Tribal Program
• Solar Spring Break
• International Program
GRID has trained over 25,000 volunteers in hands-on solar installation.
Workforce Initiatives

• Realizing an Inclusive Solar Economy (RISE)
• Women in Solar (WIS)
• Troops to Solar
• Solar Futures
• Low income solar programs like GRID’s offer savings to those who can greatly benefit

• Less money spent on utilities can mean more money to spend on other needs – like healthcare

• Low income communities are disproportionately negatively impacted by traditional power generation
Solar electricity production has no associated air pollution emissions.

GRID alone has prevented over 500,000 tons of GHGs

Air and water pollution from coal and gas plants is linked to

- Breathing problems
- Neurological damage
- Heart attacks
- Cancer
The Impact of Employment on Health

Unemployment may affect health in many ways. Laid-off workers are:

- 54% more likely to have fair or poor health.
- 83% more likely to develop a stress-related condition such as heart disease.

Unemployment has also been linked to:

- Loss of Health Insurance
- Increased Stress & Blood Pressure
- Unhealthy Coping Behaviors
- Increased Depression

Source: Robert Wood Johnson Foundation
Unemployment impacts communities.

- Increased risk of mortality was associated with higher neighborhood unemployment rates (van Lenthe, Borrell, Costa, Diez, Roux, Kauppinen, et al., 2005).

- In addition to engaging in riskier health behavior...the long-term unemployed may be induced to seek out work in the illegal sector (Urban Institute, 2013)
The solar industry added workers at a rate nearly 12 times faster than the overall economy in 2015

- Accounted for 1.2% of all jobs created in the US in 2015
- Employs over 200,000 workers
- 2015 annual growth rate of 20% (3rd consecutive year of 20% growth)

Source: The Solar Foundation, 2016
Good Jobs...

On average, solar jobs pay higher than the national median hourly wage.

### Table 16. Median Hourly Wage, 2014-2015

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>National Median Hourly Wage$</td>
<td>$17.09</td>
<td></td>
</tr>
<tr>
<td>Installer</td>
<td>$20.00</td>
<td>$21.00</td>
</tr>
<tr>
<td>Sales Representative</td>
<td>$28.85</td>
<td>$28.85</td>
</tr>
<tr>
<td>Solar Designer</td>
<td>$26.00</td>
<td>$26.92</td>
</tr>
<tr>
<td>Assembly Worker</td>
<td>$15.00</td>
<td>$18.00</td>
</tr>
</tbody>
</table>

Source: The Solar Foundation, 2016
GRID Alternatives

...For Good People
What is Workforce Development at GRID?

RISE - 5 R’s

• Recruitment
• Real-world Experience
• Readiness
• Referral
• Retention
Who We Work With

GRID works with:
- Individuals
- Job training organizations
- Community colleges.
How We Work

Individuals and groups from Job Training Organizations have access to:

- Volunteer experience, skills check-off, leadership pathways
- Real hands-on experience doing single-family homes, multi-family, and utility style installations
- Workshops related to different aspects of solar careers
Organization Spotlight: Green City Force (GCF)

GCF partners with GRID to provide hands-on training and exposure to solar for young NYC public housing residents that benefits underserved communities.

GCF Corps members are exposed to

- educational sessions on solar power
- site visits to assess rooftops for solar
- two-day install
- intro to design
Organization Spotlight: Proteus, Inc.

Proteus is one of GRID’s most successful job training partners, with more Proteus trainees finding employment in the solar industry than any other partner.

Proteus pairs GRID’s hands-on experience with their classroom-based training.
Organization Spotlight: Homeboy Industries

Program in LA for formerly gang-involved and recently incarcerated men and women.

Participants in the PV training program receive classroom training from East Los Angeles Skills Center and hands-on training with GRID.

Close to 1,000 clients have been serviced since Homeboy began. The program graduates over 92% of its candidates with a 70% placement rate within 90 days of graduation.
GRID’s Multifamily Work

Viking Village, Fresno CA, 2015
- In partnership with Fresno Housing Authority
- 16.7 kW system
- 18 housing authority residents and family members participated in install
- Resident engagement on EE and Green Jobs
Check our low income solar policy guide!

LowIncomeSolar.org

#SolarforAll
Thank you!

Erika Symmonds
Director of Workforce Development
GRID Alternatives
esymmonds@gridalternatives.org
Discussion