



NYSERDA

Renewable Heating & Cooling

Low-Income Forum on Energy Conference

May 26, 2016

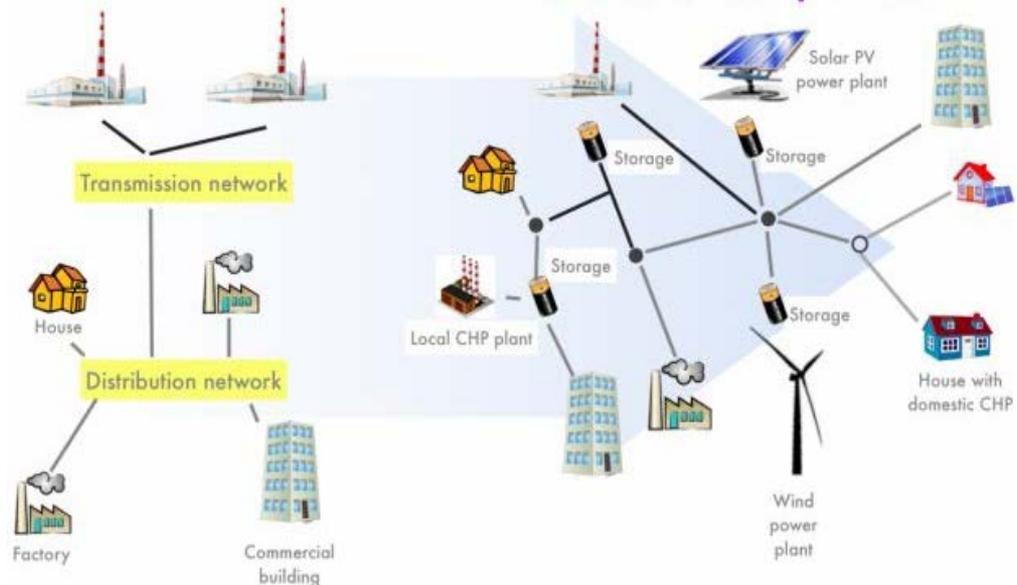
Donovan Gordon

Reforming the Energy Vision (REV)

Governor Cuomo's strategy to build a clean, resilient and affordable energy system for all New Yorkers

Yesterday
Centralized Power

Tomorrow
Clean Localized Power



Clean Energy Fund (CEF)

- **10-year, \$5 billion funding commitment**
- **Reshapes New York's energy efficiency, renewable energy and energy innovation programs**
- **Reduces cost of clean energy**
- **Accelerates adoption of energy efficiency to reduce load**
- **Increases renewable energy to meet demand**
- **Mobilizes private investment in clean energy**

Renewable Heating & Cooling Goal

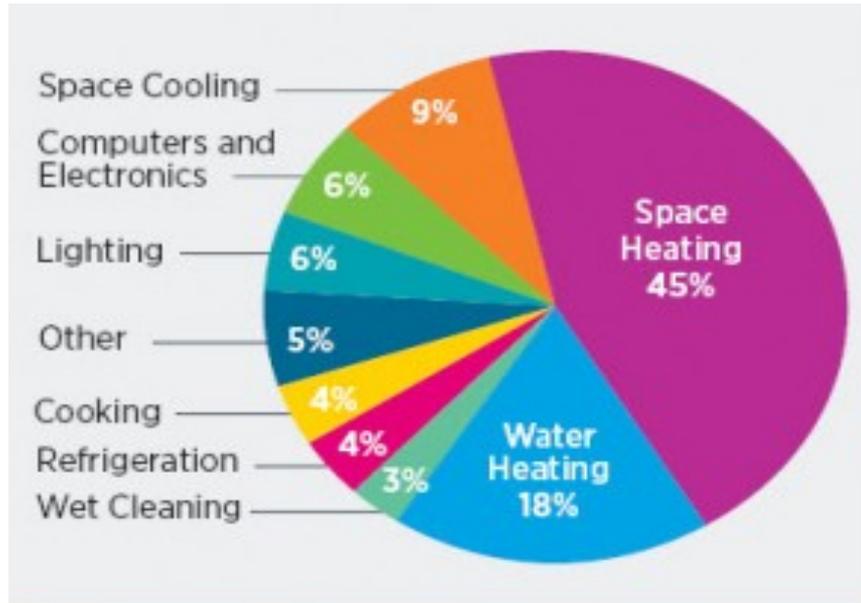
- **Reduce consumers overall energy bill, reliance on fossil fuels for heating, and the amount of green house gas emissions from buildings by developing economically viable, and scalable renewable heating & cooling markets and businesses in New York**

Barriers

- **High first costs**
- **Limited training available for installers, designers, project managers, and engineers**
- **Lack of consumer knowledge and awareness**

Residential Energy Consumption

(Geothermal heat pumps is a renewable solution for the biggest portion of residential energy consumption)
“space heating ,space cooling, and water heating”



US home energy use - source: US Department of Energy (DOE) -
2010 Buildings Energy Data Book, Table 2.1.1 Residential Primary Energy
Consumption, by Year and Fuel Type.

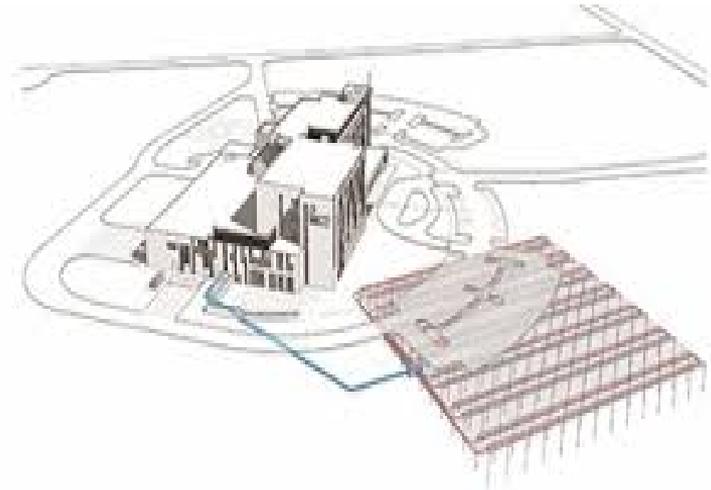
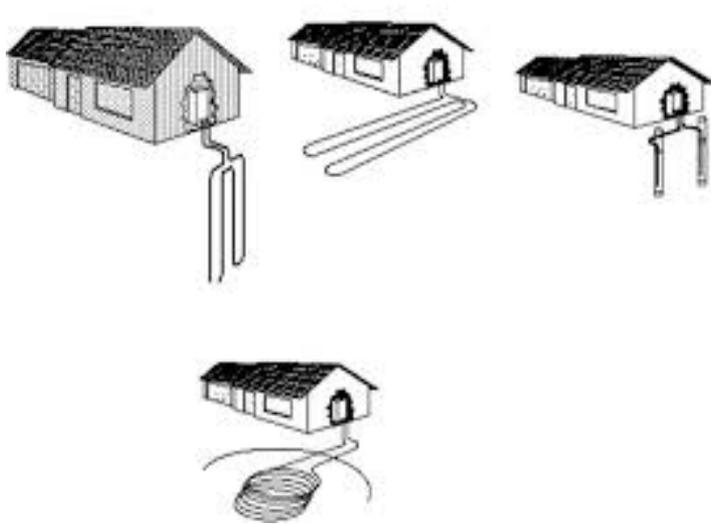
Renewable Heating & Cooling Technologies

- Air Source Heat Pumps
- Ground Source Heat Pumps
- Biomass
- Solar Thermal Hot Water

Mini-Split Air Source Heat Pump



Ground Source Heat Pump



Biomass (Pellet Stoves)



Solar Thermal Hot Water



Policy Development

- **NYSERDA will develop policy framework, supply curve, and cost benefit analysis for the renewable heating & cooling technologies and markets working with stakeholders and others**

Market Engagement

On going discussions through voice of customer with various stakeholders:

- **Consumers**
- **NY-GEO**
- **Utilities (electric, gas, steam)**
- **Cities, Towns, Counties, and Municipalities**
- **Brookhaven National, Oakridge National Labs**
- **DOE, DPS, DEC**
- **Investors and Developers**
- **Organizing Regional Renewable Thermal Consortium of NE states**

Renewable Heating & Cooling Market Development Strategies

- **Market Characterization/Potential**
- **Policy Development**
- **Market Engagement (Interested Partners)**
- **New Business/Financial Models**
- **Marketing, Public Relations, Consumer Awareness**
- **Workforce Training and Development**
- **Demonstration Projects**
- **Measurement & Verification**
- **2016 Program Portfolio – Under Development**
- **Research & Development**

New Business/Financial Models

- Establishing a team comprising of staff, stakeholders, and consulting firms to help NYSERDA develop business and financing models for renewable heating & cooling markets
- Models under evaluation:
 - Utility ownership of loop fields
 - District geothermal systems
 - Thermal utilities / ESCO
 - Third party ownership
 - Lease programs
 - PPA
 - On bill financing
 - Commercial PACE (Energize NY)

Marketing

- **Develop marketing plans for awareness and uptake**
- **Target Groups Include:**
 - **Consumers**
 - **Engineers**
 - **Architects**
 - **Real Estate Industry**
 - **Developers**
 - **Investors**
 - **Facilities Managers**
 - **Environmental Organizations**
 - **Government Agencies (municipalities & inspectors)**

Workforce Training and Development

- **Create training programs to develop skills for geothermal design and installation partnering with IGSHPA, ASHRAE, ACCA, and manufacturers**
- **Design training programs for the following groups:**
 - **Installer**
 - **Designer**
 - **Engineer**
 - **Architect**
 - **Project Manager**
 - **Government Agencies**
 - **Building Inspectors**

2016 Program Portfolio Under Development

- **\$1.5M for geothermal heat pump market development: (roll out second half of 2016)**
 - **Workforce Training and Development**
 - **Consumer awareness and education**
 - **Codes & Standards**
 - **Quality Assurance**
 - **Marketing and Public Relations**
- **Conducting analysis on the benefit of ground source heat pumps for peak demand shaving and increased system utilization for electric utilities.**

Thank You

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Questions?