




NAESCO – National Association of Energy
Service Companies

Sheraton - Hartford



A collage of images at the bottom of the slide. From left to right: a person pointing at a computer monitor, a glowing yellow and orange particle stream, a person wearing a white lab coat and a surgical mask, a piece of industrial machinery, and a close-up of solar panels.

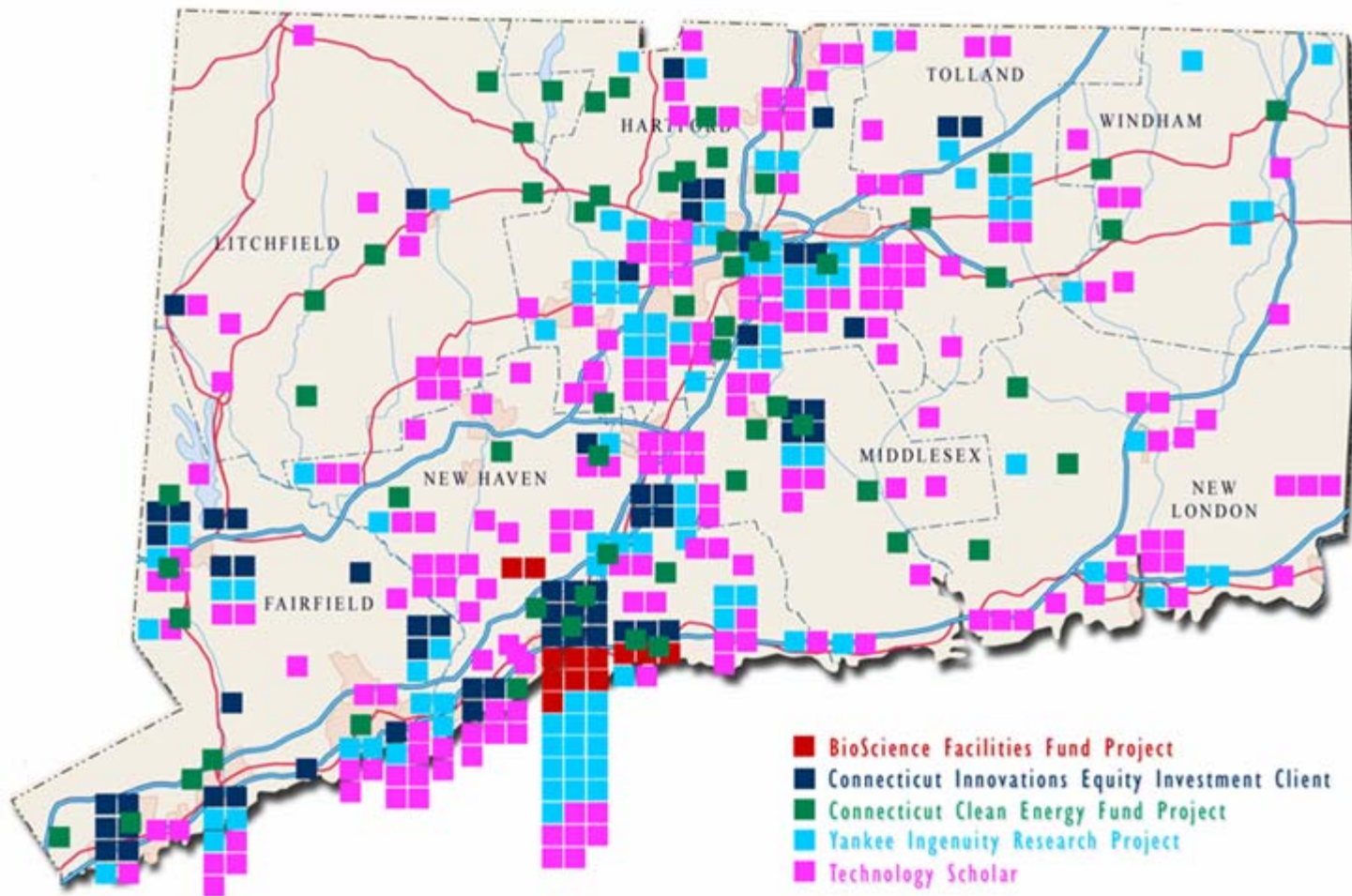
OBJECTIVES FOR TODAY

- CI/CCEF Overview
- Why Clean Energy Is Important
- Clean Energy Technologies
- CCEF Programs

CONNECTICUT INNOVATIONS (CI)

- Legislation – 1989
- Quasi-public authority
- Driving a vibrant, entrepreneurial, technology-based economy in Connecticut
- Self-sustaining since 1995

CI's STATEWIDE REACH



CONNECTICUT CLEAN ENERGY FUND (CCEF)

- Legislation 1998 / Launch 2000
- Administered by CI
- Surcharge on electric bills → ~\$20 million per year
- 50¢ per household per month

CCEF GOALS

Aimed at Benefiting Connecticut Ratepayers

1. Create a supply of clean energy (installed capacity)
2. Foster the growth, development and commercialization of clean energy technologies
3. Stimulate use of clean energy by increasing public awareness



CCEF RESULTS

(as of 9/15/06)

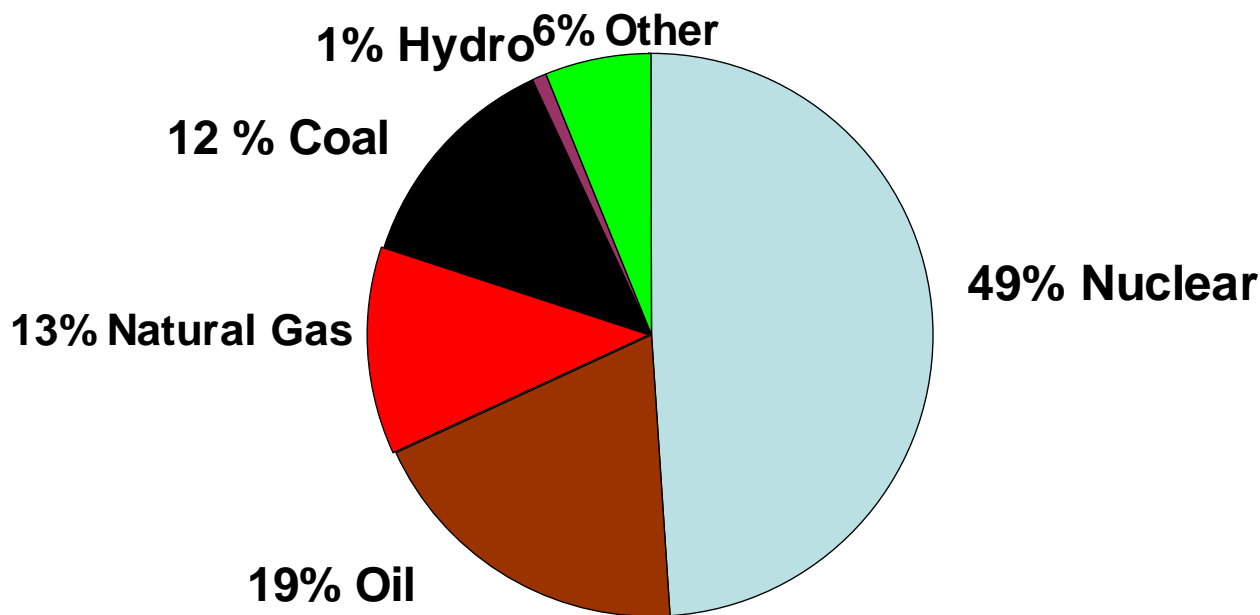
Technology	Number of Projects	Size (KW)	Total Project Cost (\$000,000)	CCEF Subsidy (\$000,000)
Completed				
Fuel Cell Demo (Technology)	5	34.3	\$3.464	\$2.190
Fuel Cell Commercial	6	1,300.0	\$10.762	\$7.460
Fuel Cell Total	11	1,334.3	\$14.226	\$9.650
Commercial (PV) Total	11	291.5	\$2.610	\$1.433
Residential (PV) Total	87	359.0	\$2.952	\$1.569
Biomass Total	0	0.0	\$0.000	\$0.000
Other Total	0	0.0	\$0.000	\$0.000
Completed - Total	109	1,984.8	\$19.788	\$12.652

In Process				
Fuel Cell Demo (New Technology)	2	52.0	\$1.655	\$1.190
Fuel Cell Commercial Total	2	14,800.0	\$14.580	\$11.050
Fuel Cell Total	4	14,852.0	\$16.235	\$12.240
Commercial (PV) Total	10	707.2	\$7.920	\$4.981
Residential (PV) Total	67	314.8	\$2.681	\$1.370
Biomass Total	3	60,288.0	\$93.405	\$1.850
Other Total	1	35.0	\$0.194	\$0.050
In Process - Total	85	76,197.0	\$120.435	\$20.491

NEED FOR CLEAN, RENEWABLE ENERGY

Connecticut's Current Energy Usage:

93% of Connecticut's electricity is generated with non-renewable energy – oil, coal, natural gas, and nuclear.



NEED FOR CLEAN ENERGY

Existing Electric Power Plants



Single largest industrial polluters:

- Sulfur Dioxide – causes acid rain (from oil, coal)
- Nitrogen Oxides – causes smog (from gas turbines, oil, recipis)
- Mercury – poisonous (from coal)
- Carbon Dioxide – potentially causes climate change (all)

WHY CLEAN ENERGY?

Benefits

- Clean Energy = Local Jobs
- Clean Energy = Healthy Environment
- Clean Energy = Energy Independence
- Clean Energy = Hedge against rising energy costs

WHY RENEWABLE?

Oil, Coal, and Uranium vs. the Sun

1. Approximately 10.5 Million Terawatt-Hours of energy is stored in the Earth in the form of oil, coal and uranium
2. If electric consumption remains stagnant, that translates to about 100 to 150 years of energy remaining
3. If the entire World population consumed energy at the same rate as in the US, that number drops to 15 to 20 years
4. The sun transmits 330 Million Terawatt-Hours of energy per year
5. Individually in the US we use about 1 lb of coal per day through electric usage
6. It may take an 8 gram solar cell about 2-3 years to produce the same energy, but there is at least 23 more years of energy production in that cell [*making it over 500 times more material efficient by weight*]

CLEAN, RENEWABLE ENERGY TECHNOLOGIES



Fuel Cells



Solar*



Biomass*



Hydro*



Landfill Gas*



Wave*



Wind*

CCEF PROGRAMS

For Businesses/Institutions:

- **For Energy Consumers**
 - On-site Renewable Distributed Generation Program
 - Solar Rebate Program
 - Project 100
- **For Technology Developers/Manufacturers/Installers**
 - Pre-Development Program
 - Operational Demonstration Program

ON-SITE RENEWABLE DISTRIBUTED GENERATION PROGRAM

- Enable renewable energy installations at **industrial, institutional and all commercial sites**
- > 10 kW
- Grants to “buy down” the cost of renewable energy generating devices
- Up to \$2 million per grant
- Host site in CL&P or UI service territory

ON-SITE RENEWABLE DISTRIBUTED GENERATION PROGRAM

THE PROCESS

- Applications accepted on rolling basis
- Staff reviews projects against screening criteria
- CCEF financial modeling and award determination
- Agreement of award amount by applicant
- Projects Committee and Advisory Board approval

ON-SITE RENEWABLE DISTRIBUTED GENERATION PROGRAM

Project Funding Amounts

- Max funding → \$2,000,000
- Funding Caps

Technology	Solar	Fuel Cells	Small Wind	Small Biomass	Landfill Gas	Hydro
Funding cap	\$5/W	\$4.70/W	\$3.60/W	\$3.30/W	\$3.20/W	TBD
Evaluation timeframe	20 yrs	10 yrs	15 yrs	10 yrs	10 yrs	TBD

- Specific grant amount determined after CCEF completes project modeling
- Total program Funding is currently \$21,000,000

ON-SITE RENEWABLE DISTRIBUTED GENERATION PROGRAM

COMPLETED PROJECTS



**Pepperidge Farm
(Bloomfield)**



CT Transit
Hartford, Connecticut
23.1 kW Solar Array

**New Haven
Water Pollution Control
Authority**

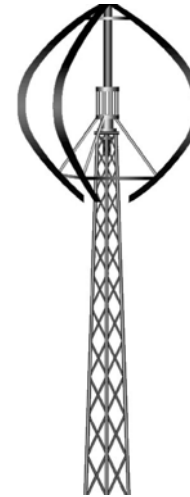


**Connecticut Transit
Maintenance Facility
(Hartford, CT)**

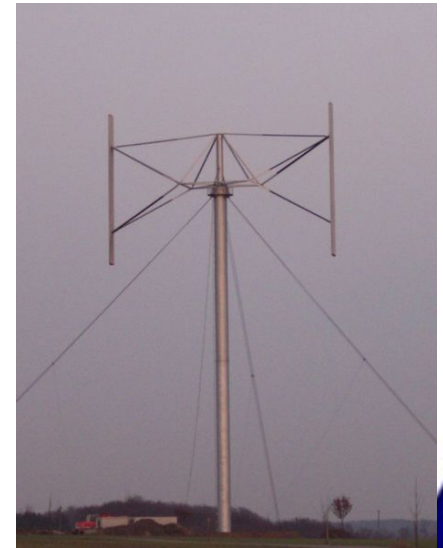
Wind



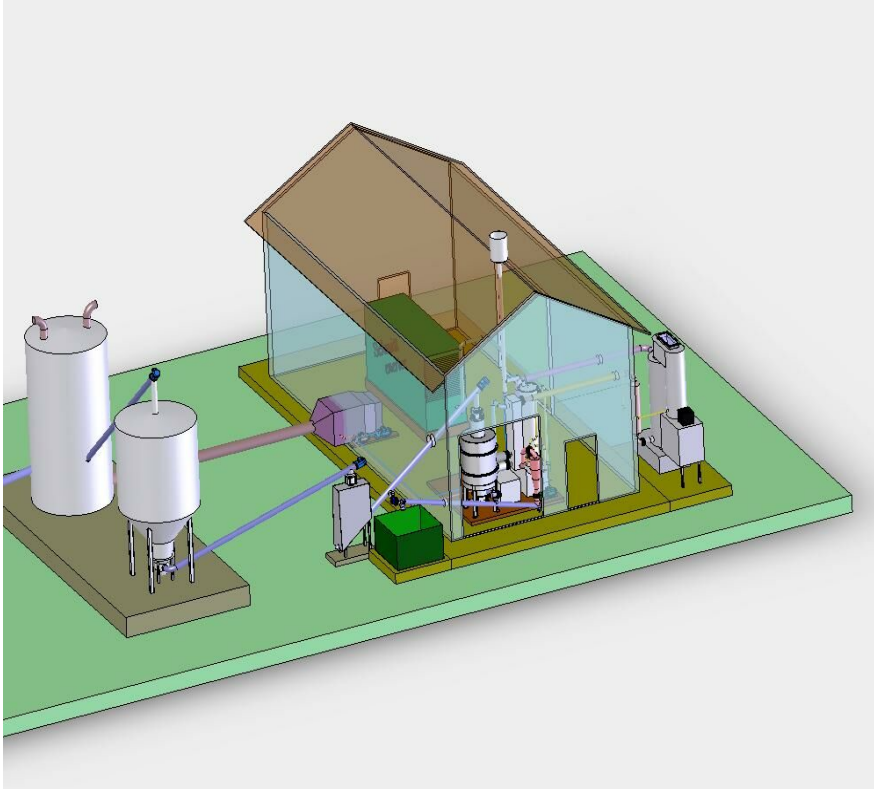
Horizontal-axis wind turbines



Vertical-axis wind turbines



Biomass (Wood Gasification)



Tallon Lumber



Biomass (Wood Gasification)



Large-scale biomass

PV SOLAR REBATE PROGRAM

For Residential, Nonprofit and Governmental Installations

- Rebates for up to 10 kilowatts:
 - Residents:
 - Up to \$25,000 rebate
 - Incremental Connecticut State Sales Tax (over 5 kW and up to 10 kW)
 - Nonprofits & Government: Up to \$50,000 rebate
- Factors impacting rebate amount (partial list): efficiency of inverter, tilt of panels, shading factor
- Pays for about 55% of total system cost
- CL&P or UI customer

PV SOLAR REBATE PROGRAM



FINAL THOUGHTS



CLEAN ENERGY. LET'S MAKE MORE.

IT'S REAL, IT'S HERE, IT'S WORKING

VISIT US ONLINE
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