

Investing in Connecticut's Energy Future

Connecticut's \$3b+ Long-Term
Investment in Clean Energy and Energy
Efficiency Over the Next Decade

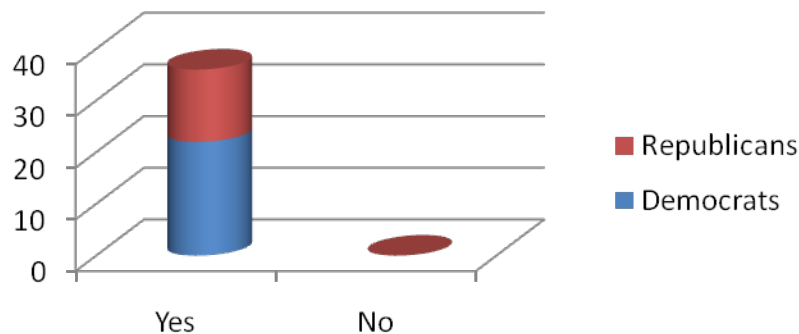


State of Connecticut
October, 2011

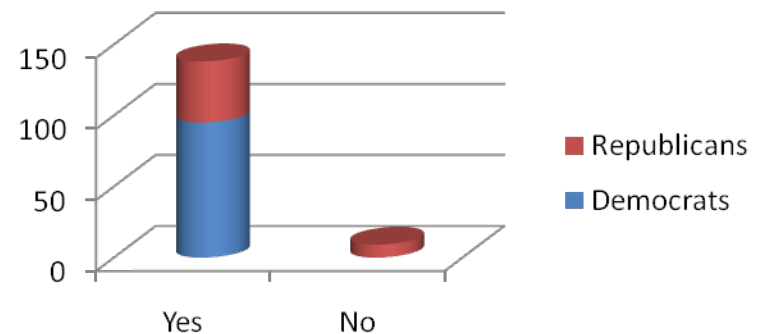
Connecticut Has Made a Bipartisan Investment in Clean Energy and Energy Efficiency

- Public Act 11-80 passed the Connecticut State Senate by a vote of 36-0, and cleared the Connecticut State House by a vote of 139-8

Votes in the Connecticut Senate



Votes in the Connecticut House



- Public Act 11-80 contains provisions that will lower energy costs for ratepayers in Connecticut, while also incentivizing clean energy and energy efficiency in the state
- While other states are scaling back their commitments, Connecticut has committed \$3 billion to clean energy and energy efficiency over the next ten years

P. A. 11-80 Provides a Steady Investment in Environment Businesses in Connecticut

- Transforms Connecticut energy policy to ensure that it will support the Governor's commitment to the 3 E's (Energy, Environment, and the Economy):



- Provide a steady, long-term commitment to clean energy in the state
- Promote energy conservation through efficiency measures
- Achieve both of these goals while reducing ratepayer's bills

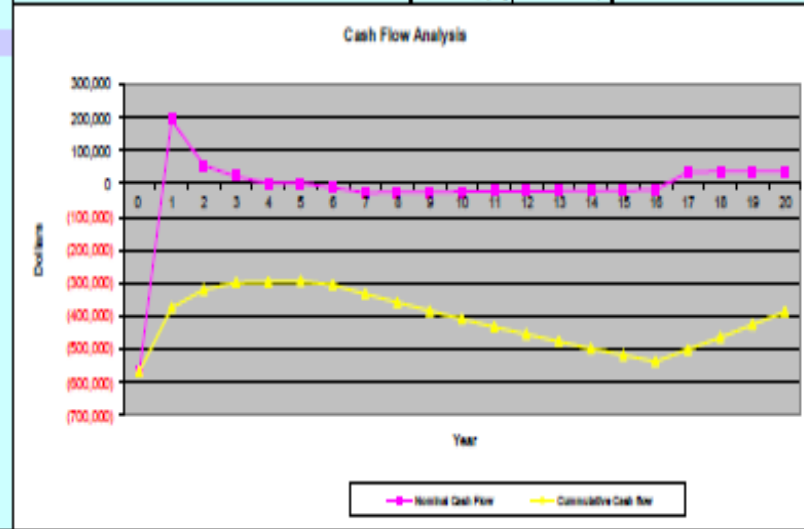
What Problem Are We Trying to Solve

Financial Model With PV Technology
 Connecticut Center for Advanced Technology, Inc.
 Hartford Area Manufacturer

Does Not Break Even
 NPV (\$361,790)
 IRR -10%

PV	Technology
104	KWAC Peak Host Demand Capacity
76%	Host approximate Load Factor
488,400	kWhs Host Average Energy Demand
0%	Host Expected Return on Equity
-	btu/hr Average Host Heat Demand
80	KWAC PV Installation
13.16%	Capacity Factor
-	Average Heat Rate
-	mmmbtu Heat Input Per Year Required
82,160	PV Capacity is 76.57 % of Host's Peak
-	btu/hr Average generated by PV
14.88	Utility Avoided Energy Cost ¢/kWh
3.0%	Utility & Nat Gas & LFG Esc. Rate
3.0%	O&M Esc. Rate
\$0.00	Boiler Fuel \$/mmmbtu
\$0.00	Fuel Oil Cost \$/mmmbtu
\$0.00	Propane Cost \$/mmmbtu
\$0.00	Boiler Natural Gas and Fuel Oil Cost \$/mmmbtu
\$0	ZRECS (\$/MWh)
\$14.00	Recs Market Value De-Esc @2%
0.82	O&M ¢/kWh
80.0%	Natural Gas or Oil Fired Boiler Efficiency
20	- Number of Years in the Analysis
Rate 36	Host CL&P Electric Rate
Third Party Rate	0.00

Cost of Capital:			Capital Cost:		
	Percent	Rate	pre-tax	PV	
Debt	100.00%	11.00%	11.00%	\$8,000	per KW-DC (PTC)
Equity	0.00%	8.00%	0.00%	Install Cost \$1,100	per KW-DC (PTC)
Weighted Capital Cost			11.00%	B/E Analysis	per KW-DC (PTC)
Finance Term - 16 Years				Total Cost \$7,100	per KW-DC (PTC)
Depreciation - 8 Years				Or \$688,000	Dollars
				0	
				Subsidies&Tax (170,400)	
				Host Equity \$0	



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CL&P Non Profit
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What Problem Are We Trying to Solve? (Continued)

Financial Model With PV Technology
Connecticut Center for Advanced Technology, Inc.
Hartford Area Manufacturer

PV Technology	
104	KWAC Peak Host Demand Capacity
75%	Host approximate Load Factor
488,400	kWhs Host Average Energy Demand
0%	Host Expected Return on Equity
-	bt/whr Average Host Heat Demand
80	KWAC PV Installation
13.15%	Capacity Factor
-	Average Heat Rate
-	mmbtu Heat Input Per Year Required
92.160	PV Capacity Is 76.57 % of Host's Peak
-	bt/whr Average generated by PV
14.88	Utility Avoided Energy Cost ¢/kWh
3.0%	Utility & Nat Gas & LFG Esc. Rate
3.0%	O&M Esc. Rate
\$0.00	Boiler Fuel \$/mmbtu
\$0.00	Fuel Oil Cost \$/mmbtu
\$0.00	Propane Cost \$/mmbtu
\$0.00	Boiler Natural Gas and Fuel Oil Cost \$/mmbtu
\$320	ZRECS (\$/MWh)
\$14.00	Recs Market Value De-Esc @2%
0.82	O&M ¢/kWh
80.0%	Natural Gas or Oil Fired Boiler Efficiency
20	- Number of Years in the Analysis
Rate 35	Host CL&P Electric Rate
Thrd Party Rate	0.00

Cost of Capital:				Capital Cost:	
	Percent	Rate	pre-tax		
Debt	100.00%	5.50%	5.50%	PV	\$6,000 per KW-DC (PTC)
Equity	0.00%	8.00%	0.00%	Install Cost	\$1,100 per KW-DC (PTC)
Weighted Capital Cost			5.50%	B/E Analysis	per KW-DC (PTC)
Finance Term - 16 Years				Total Cost	\$7,100 per KW-DC (PTC)
Depreciation - 6 Years				Or	\$568,000 Dollars
				Subsidies&Tax	0
				Host Equity	(170,400)
					\$0

Payback in year 7	
NPV	\$208,368
IRR	11%

Cash Flow Analysis

CL&P	<input checked="" type="checkbox"/>
U I	<input type="checkbox"/>
Non Profit	<input type="checkbox"/>

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New Incentives in P.A. 11-80

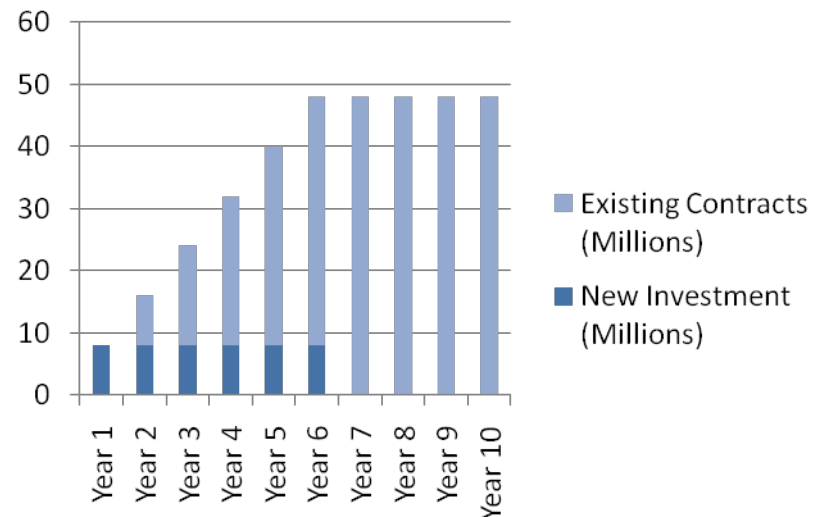
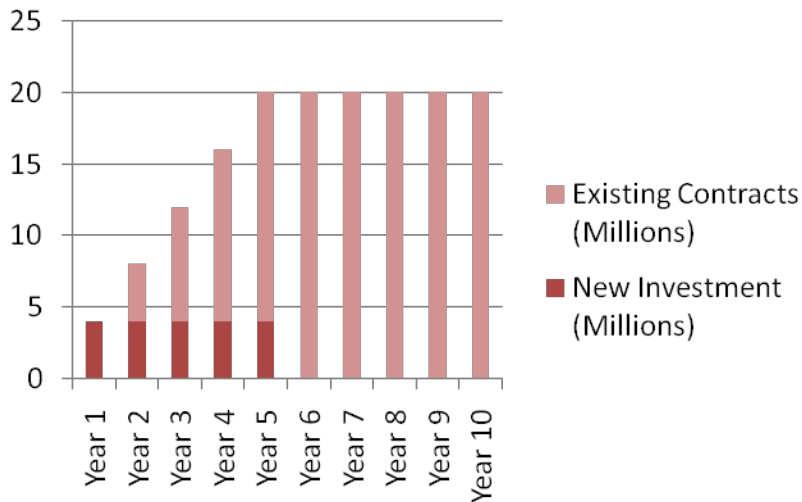


Creates the Nation's First Full-Scale “Green Bank,” or CEFIA

- What problem (s) are we trying to solve?
 - Maximize limited resources
- CEFIA will be capitalized with roughly \$30 million annually, with additional \$18 million allocated on a one-time basis through repurposing of existing Green Loan Guaranty Fund
- CEFIA also has the authority to raise private capital while providing a reasonable rate of return
- CEFIA will leverage its resources by a multiplier of at least 5, achieving maximum efficiency with scarce existing resources

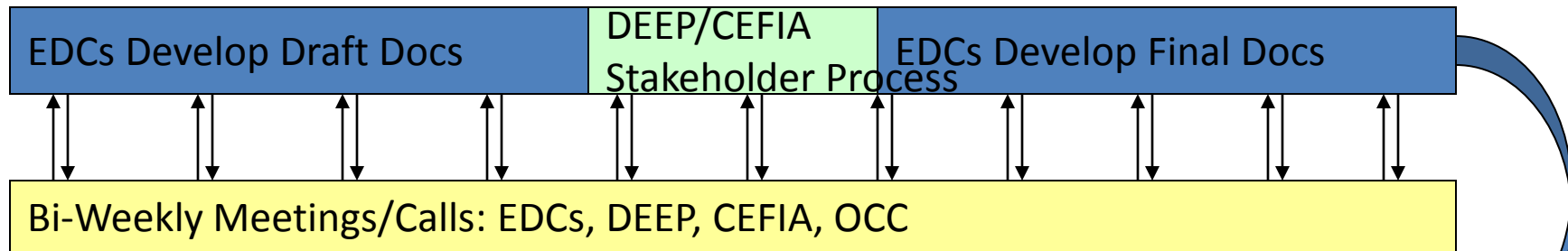
Creates Innovative, Long-term Z-REC and L-REC Programs

- What problem(s) are we trying to solve?
 - Inconsistent and disparate incentives and policies
- Two innovative new programs address the need to provide predictable, reliable demand creation for zero emissions technologies and low emissions technologies
- Electric Distribution Companies (EDCs) are required to enter into long-term, 15 year contracts with zero emissions and low emissions projects, respectively
- \$8 million of 15 year contracts are to be signed every year for six years with zero emissions projects, and \$4 million of 15 year contracts are to be signed every year for five years with low emissions projects



ZREC/LREC Process Map and Program Description

Draft Solicitation Timeline



Solicitation plan will be filed with Public Utilities Regulatory Authority (PURA) by Dec 27, 2011



After approval of solicitation plan, the EDCs will issue RFPs



Final procurement plan/contracts issued

ZREC Contracts

- Cover solar photovoltaic, solar hot water, wind and hydroelectric systems
- Generation projects limited to 1 MW each
- The electric companies must enter into 15-year contracts to purchase ZRECs at a price not to exceed \$350 per ZREC
- The companies must spend \$8 million in the first year, rising by \$8 million per year to \$48 million per year in 2017 and later

LREC Contracts

- LRECs include fuel cells, biomass gasification, landfill gas and other Class I renewable-energy sources
- Generation projects will be limited to two MW each
- Electric companies must spend \$4 million the first year, rising by \$4 million per year to \$20 million per year in 2016 and later

Creates the Department of Energy and Environmental Protection (DEEP)



- What problem(s) are we trying to solve?
 - Inconsistent state policies and disparate energy policy entities
- Creation of a Comprehensive Energy Plan
 - DEEP creates triennial plan to guide energy policy setting for the state
- Procurement Officer
 - Manages standard service procurement, reducing rates
- Public Utilities Regulatory Authority (PURA)
 - Continues to function as independent adjudicatory authority, with decisions guided by comprehensive energy plan

Energy Efficiency is Advanced

- What problem(s) are we trying to solve?
 - Efficiency in Connecticut can be leveraged for greater benefits on behalf of ratepayers
- Lead by Example: Efficiency in state buildings
 - DEEP develops a plan to reduce energy use in state buildings (10% by 2013, and 20% by 2018)
 - The state will enter into energy savings performance contracts (ESPCs)
 - Also will utilize the bonding agenda, and assist municipalities
- Financing for energy efficiency through the Connecticut Green Loan Guaranty Fund
 - Existing bonding authority within Green Loan Guaranty Fund transferred to CEFIA
 - Leverage existing funds to provide low-cost financing (up to 100% of project cost)
- Weatherization program
 - DEEP administers a federally appropriated weatherization assistance program that will service low-income residents
- Energy Savings Performance Contracts (ESPC)
 - Authorizes all state agencies and municipal facilities to enter into an ESPC and establishes a DEEP-managed ESPC program that will provide technical assistance and standardized ESPC procedures and processes.
 - Key tool to allow CT to achieve its energy efficiency goals in public buildings (reduce energy use 10% by 2013 and another 10% by 2018) and will result in major economic activity and job creation.

Large Scale Renewable Energy Development

- What problem(s) are we trying to solve?
 - Challenges meeting an aggressive RPS while generating in-state benefits

- Up to 30 MW of Class I renewable generation ownership by EDCs and other large-scale sources of generation

- Both EDCs may build, own and operate up to 10 MW each
- EDCs can enter into owner/operator partnerships with private entities to pursue these projects
- Remaining 10 MW will be procured through a competitive solicitation for in-state renewable projects



Other Provisions

- Virtual Net Metering
 - Municipalities allowed to apply excess renewable generation credits from one location to other accounts owned by the municipality
- Time of Use Rates
 - EDCs required to provide customers with option of utilizing time of use rates, which incentivize off-peak electricity consumption
- Appliance Efficiency Standards
 - Commissioner of DEEP required to review any appliance efficiency standards, and judge standards against a business/consumer balanced criteria before accepting, modifying, or rejecting standards
- Many more

Total Incentives Available

It Adds Up: \$3.5b in Clean Energy Investment in Connecticut Over the Next Decade

\$360 million: Long-Term Contracts of Behind the Meter Zero Emissions Clean Energy Sources in Connecticut (Z-REC)

An effort to promote in-state, behind the meter, zero emission clean energy sources like solar, wind and hydro to help the state meet its 20 percent electricity sources from renewable energy goal.

\$160 million: Long-Term Contracts of Behind the Meter Low Emissions Clean Energy Sources in Connecticut (L-REC)

An effort to promote in-state, behind the meter, low emissions clean energy sources like fuel cells to help the state meet its 20 percent electricity sources from renewable energy goal and to build a manufacturing industry.

\$775 million: Long-Term Contracts of Grid Tied Projects in Connecticut

Promote in-state, grid tied clean energy sources no less than 1 MW in size to help the state meet its 20 percent electricity sources from renewable energy goal and to build a manufacturing industry. 180 MW of in-state projects are to be developed through the use of long-term contracts.

\$920 million: Renewable Energy

A \$0.001 per kilowatt hour surcharge levied on all electricity sold by private utilities and a green loan guarantee fund. This charge appears on a customer's utility bill and supports clean energy programs and initiatives through the Clean Energy Investment and Finance Authority. The Authority is seeking to leverage private sector capital at a 5:1 ratio with ratepayer funds.

\$350 million: Clean Energy Sources in the Region

Utilities must get 20 percent of the electricity they provide to customers from renewable energy sources by 2020.

\$840 million: Energy Efficiency

A \$0.003 per kilowatt hour surcharge levied on all electricity sold by private utilities. This charge appears on a customer's utility bill and supports energy efficiency programs and initiatives through the Connecticut Energy Efficiency Fund.

\$150 million: Carbon Dioxide Emission Allowances

Proceeds from the sale of carbon dioxide emission allowances through Connecticut's participation in the Regional Greenhouse Gas Initiative will support energy efficiency and clean energy projects and investments.

It should be noted that electric ratepayers paid \$5.365 billion in electricity costs for 2009 (EIA 2011). This \$3.5 billion in clean energy and energy efficiency investments by Connecticut ratepayers represents about 5% of electricity costs over the decade.