Energy and Technology Committee

Testimony Submitted by Kenneth Berlin
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Public Hearing – March 15, 2011
Senate Bill No. 1 - AN ACT CONCERNING CONNECTICUT'S ENERGY FUTURE

Thank you for the opportunity to present testimony regarding Senate Bill Number One - AN ACT CONCERNING CONNECTICUT'S ENERGY FUTURE.

I am the General Counsel of the Coalition for Green Capital (CGC). The CGC is a non-profit organization working to establish investment funds on a state, national, and international level that would provide low-cost loans to clean energy and energy efficiency projects. Commissioner Dan Esty and I have known and worked with each other for many years and we are discussing my taking an unpaid position with him as a Special Policy Advisor.

The CGC believes that low-cost financing can have a dramatic effect on lowering the cost of clean energy and energy efficiency projects. This is critical to a state like Connecticut that has a RPS, but which is importing most of its renewable energy credits from projects outside the state. It is also critical if Connecticut wants to lower the cost of doing business and living in the state by expanding the funding needed to bring energy efficiency projects to scale. If Connecticut can lower the cost of these projects, there is a much greater chance that renewable energy projects will be built in state and that there will be many more energy efficiency projects in the state, creating Connecticut jobs, lowering the cost of electricity, and keeping hard-earned Connecticut funds in Connecticut.

In order to accomplish these goals, the CGC recommends the establishment of a financing entity which we can preliminarily call the Connecticut Energy Investment Fund. The Fund would provide low-cost loans to clean energy and energy efficiency projects by relying on re-purposed existing funds as well as tapping private capital markets. The Fund would require no new appropriations from the Connecticut government.

Here is how a Connecticut Energy Investment Fund would keep down costs of clean energy projects. First, our studies have shown that even today, when the cost of commercial loans is relatively low, inexpensive, low-cost financing can reduce the cost of a wind or solar project by 15-25%. Earlier last year, when commercial interest rates were higher, low cost long term loans would have reduced the cost of a project by up to 40%. A chart analyzing this, based on actual PV solar projects, is attached to this testimony.

Second, if a fund is established, the Fund would also seek private funds to supplement its capital. We think that Connecticut businesses and investors will step up to this challenge.

Third, establishing the Fund would greatly reduce the cost to Connecticut of supporting clean energy and energy efficiency projects by making one dollar go much further than under current programs. An independent investment fund can leverage its capital so that $1 can support $5 or more of lending. The Fund would invest in low-risk, commercially-ready renewable energy projects, and because the fund would be a not-for profit entity, it would have no incentive to take risks with its capital. It would be subject to capital rules and other restrictions designed to ensure that there is an adequate capital reserve to cover all project risks. And the legislature would set the upper limits on the leveraging that the Fund could employ.

Fourth, there are at least 13 different funds in S-1 that support renewable energy and energy efficiency projects. Consolidating the financing portions of many of those funds would enable the Connecticut Energy Investment Fund to leverage these funds while greatly reducing the administrative costs of running multiple overlapping funds.

Fifth, we recommend that this fund be a quasi-governmental entity. The Fund CEO and Directors would initially be appointed by the Governor, but the fund would be independent from the government and would not be a state agency. The Fund would reinforce public policy with private sector expertise and discipline.

Finally, the fund would provide up to 100% long term low-cost financing to energy efficiency projects. We have found that even though energy efficiency projects lower costs and recover capital investments in many cases in a relatively short period of time, homeowners and small businesses resist using their discretionary funds on energy savings. They have other uses of the funds that usually take precedence. It thus has proven difficult to bring energy efficiency projects to scale anywhere in the U.S. Bringing energy efficiency projects to scale in Connecticut requires that retrofits occur on hundreds of thousands of buildings - there are over 1.4 million residential buildings and 95,000 commercial buildings in the state. We believe that the potential scale of funding that the Connecticut Clean Energy Investment Fund would provide would help solve this problem.

I have also attached a PowerPoint that explains these issues in much more detail. I am always available to answer questions and can be reached at 202-468-9040.

Connecticut Energy Investment Fund

Job Creation in Connecticut's Clean Energy Economy Through Public-Private Financing and Deployment of Clean Energy and Energy Efficiency Projects

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Who Are We?

- **Coalition for Green Capital** – the Coalition for Green Capital (CGC) is a non-profit organization that exists for the purpose of advocating tax and finance policies that support investment in energy efficiency and clean energy. CGC pursues such policies at the national, state and international level.

- **Clean Energy Finance Center** – the Clean Energy Finance Center (CEFC) is a recently established non-profit organization that serves as a nexus for objective research and analyses of clean energy and energy efficiency finance and as a catalyst for economic development for the State of Connecticut by building a new cluster in the emerging sector of environmental finance.

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Goal: Increase jobs from and investment in a clean and efficient energy economy

Connecticut can create 20,000 jobs through the investment of $200M annually and transition to a clean energy economy by

1. Upgrading buildings with deep energy retrofits – 15% of residential and commercial buildings by 2020 and 50% of state, municipal, school buildings by 2020
2. Investing in distributed generation and the electrification of the state's fleet
3. Reducing consumers' energy bills
4. Attracting new private investment into Connecticut

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Opportunity: $1 = $5 = $35

Here's how $1 in public investment can return at least $35 in Gross State Product (GSP) in Connecticut through a private sector multiplier:

1. $1 in invested in Energy Efficiency in CT returns $7 in GSP
2. $1 in public investment can be matched, or "leveraged", with $5 or more of private capital
3. Every $1 public of investment can enable at least $5 of total efficiency investments in CT, which in turn yields $35 in GSP ($1 x $5 x $7 = $35)

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Problem: Major obstacles to achieving clean energy investments and job creation

Connecticut faces several major obstacles :

1. Connecticut must address rising electricity rates
2. Connecticut cannot add to state spending
3. Connecticut needs to remove the energy agency silos and market barriers to scaling up investments in clean and efficient energy
4. Connecticut needs "all fuels" efficiency solutions
5. Private capital seeking to invest in clean energy is driven to states or countries with attractive public financing options

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Solution: CT Energy Investment Fund, a Public-Private Partnership

Connecticut Energy Investment Fund

- Combines currently existing entities and funds into a single organization to advance Connecticut's clean energy economy
- Serves as a catalyst for public-private partnerships to scale investments in clean energy and energy efficiency in our communities – and allows public dollars to go further
- Invests in Energy Efficiency, Distributed Generation, and Electrification of Vehicles
- Targets Commercial, Residential, and Public Buildings and Public Fleets

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What can Connecticut gain from a CT Energy Investment Fund?

Bringing together the clean energy and energy efficiency financing silos would:

1. Create foundation for job creation in the new energy economy
2. Maximize scarce public resources to access private capital at a minimum of 5 to 1 leverage
   - Reducing the annual public investment needed for financing to a max of $30M
3. Achieve scale necessary to address the market need
4. Make Connecticut more attractive to private capital investment
5. Ensure "all fuels" solutions for all sectors

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Action: Create an Investment Fund

What problems does clean investment face in Connecticut?

Market fragmentation in sources of financing and information results in lack of leverage

High financing costs (in rate and in time) make getting scale even tougher

Company "clients" and programs have difficulty in getting to scale: a chicken and the egg problem that with increased scale costs decline, but without scale costs are high

There are some government programs, but they are scattered; because knowledge is specialized there is a lot of "re-inventing the wheel"

The solution: Create a new CT Energy Investment Fund that centralizes existing programs and is granted other authorities

"The case for centralization is to bring scale to financing to help programs and companies achieve scale"

One-stop shopping and specialized knowledge

Ability to scale financing

The entity would be able to attract more funding

Standardization in financing contracts

Will speed processing, lower costs, and permit aggregation of projects for funding

Where would funding for an Investment Fund come from?

Existing Public Sources of Capital in Connecticut

Ratepayer funds, RGGI funds, forward capacity market revenue, REC sales, state pension fund investments, Green Loan Guaranty Fund, Qualified Energy Conservation Bonds, federal grants

Federal Funding

- Existing federal programs could be utilized for funding
- An EIT (see Appendix) could provide capital to the CT Energy Investment Fund

Private Sources of Capital in Connecticut

Banks, ESCOs, capital markets, mission-related investors, pension funds, insurance companies, other private investors

Additional Funding Can Be Generated Through:

- Regulatory changes
- State tax policy
- Long-term, low-cost financing coupled with power purchasing agreements

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Investment Fund would optimize public financing by combining funds

Strategies to Maximize Public Public/Private Investment in Connecticut

- Leveraging capital provided
- Aggregation services
- Existing bond issues
- Interest rate buy downs
- On-bill repayment
- "Investment-grade" measurement & verification
- Coordination with other marketing & workforce development initiatives

More effective use of limited public financing resources

- Combine public financing for projects that require multiple forms and sources of public financing support, including financing support from a complementary proposed federally-created Energy Investment Trust
- Develop a core set of experienced staff to increase effectiveness of limited public financing resources and reduce overall administrative costs

Make public financing more attractive as an inducement for significant private capital investments

- "One-stop-shopping" will simplify public financing for private developers and capital sources, and thereby encourage greater private investment
- Investment Fund can validate worthiness of projects for private investment

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Investment Fund could be seeded with $30M from existing sources of funds

Over $140M in Public Investment for Clean Energy & Energy Efficiency Currently Exists in Silos with Little to No Leverage – A $30M Public Investment Could Be Leveraged to $200M of Efficiency Financing

Entity or Source	Amount of Funds Annually
Connecticut Clean Energy Fund	$30 MM
Connecticut Energy Efficiency Fund – ratepayer	$60 MM
– other (ISO-NE revenues, Class III RECs)	$20 MM
Connecticut Green Loan Guarantee Fund	$5 MM
Connecticut Housing Investment Fund energy loan program	$3 MM
Qualified Energy Conservation Bonds	$6 MM
Regional Greenhouse Gas Initiative avail for CE and EE	$16 MM

Energy efficiency market is poised to expand greatly with proper guidance

Financing is an area of market failure in energy efficiency – these investments have a quick payback (and therefore have high rates of returns) but cannot be easily financed

- Many projects are small
- There is no standardization for performance of technology upgrades, documentation, security for lenders (against default, fraud), contracts
- Bank capital rules will continue to make bank lending difficult to obtain
- Private investors (endowments, individuals, investment managers) have expressed interest in investing in energy efficiency but limited amount of assets and lack of standardization of underwriting standards and contracts prevent participation

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Energy efficiency market is poised to expand greatly with proper guidance

The CT Energy Investment Fund has the opportunity to solve this market failure in financing

- Establish market standards for the energy upgrades, the lending, and the monitoring of savings
- Demonstrate "proof of concept" to private investors to develop private market in energy efficiency investing
- Aggregate smaller projects and bundle into larger projects to secure affordable up-front financing
- "Purchase" the loans from completed projects then aggregate for sale to private investors
- Create a pipeline of projects and that can satisfy private market demand

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Renewable Energy will also be galvanized

- Connecticut's RPS is being met almost exclusively by RECs purchased from outside of Connecticut
- Low-cost financing could make Connecticut renewable energy projects competitive with out of state sources of RECs
- Low-cost financing will reduce the cost of projects significantly (see appendix) while ensuring maximum efficiency in the usage of state funds
- Private capital will be a critical driver of the industry

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Connecticut Energy Investment Fund should have three areas of focus

1. **Bringing building energy efficiency to scale for residential, commercial, public sector**
   - ✦ Revolving loan funds and loan loss reserves
   - ✦ Energy savings performance contracting
   - ✦ Commercial PACE, bundling of smaller projects
2. **Promoting distributed and small-scale clean energy generation**
3. **Electrification of the public vehicle fleet**

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Support community-scale marketing for clean energy and energy efficiency

Local consumer-to-consumer and business-to-business marketing optimized for our compact state

- Take economic lessons learned from 10 years of clean energy and energy efficiency incentives to educate target segments
- Utilize the latest approaches in behavioral psychology and enabling technologies to create demand
- Provide financing solution that meets modest hurdle rates of target demand segments

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Legislation will be necessary

- Assess organization structure
  - Independent nonprofit
  - Quasi-public
  - Revolving loan fund within state government
- Provide a wide variety of financing and investment authority for qualified clean energy and energy efficiency projects
- Require authority for access to state, federal, and private funds, as well as necessary hiring and contracting authority
- Include safeguards for oversight, transparency, and accountability
- Pass enabling legislation for Performance Contracting in public buildings and Commercial PACE

Contact Us

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Appendix

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ADDITIONAL NOTES

✦ STRUCTURE

- Could be a new not-for-profit – possibly administered by a third party (VT and OR take this approach)
- Or could put it in an existing quasi-public entity for them to administer as outlined through a third party

✦ BONDING AUTHORITY

- Partnership can be established with existing entity in state with bonding authority or Green Bank should be established with bonding authority
- The Connecticut Green Bank could issue bonds that could be guaranteed by a federal financing entity known as the "Energy Investment Trust," thereby eliminating the risk default while investing the proceeds in clean energy and energy efficiency activities that would create jobs in the state of Connecticut

✦ USE(S) OF FUNDS

- Strategies to leverage public funding with private sector investments and provide competitive loan rates
  - e.g. interest rate buy-downs, credit enhancements (loan loss reserve fund, loan guarantees, etc.) to achieve potential leverage of public sector dollars with private funding of $5-20:1

Direct lending through a revolving loan fund

Program development, administration and technical assistance to municipalities for Energy Savings Performance Contracting and Property Assessed Clean Energy

✦ ROLE IN ENERGY SAVINGS PERFORMANCE CONTRACTING (ESPC)

- Program management: provide municipalities and school boards with technical assistance with project design
- Financing: serve as aggregator smaller projects
- Note: Enabling legislation needed to let State and municipalities enter into ESCO contracts

✦ ROLE IN PROPERTY ASSESSED CLEAN ENERGY (PACE)

- Program management: provide municipalities with technical assistance for program design/implementation
- Financing: serve as aggregator for bonding (can't have all 169 municipalities doing this on their own)

✦ THIRD PARTY ADMINISTRATION

- For program administration and various financing delivery models including structuring of revolving loan fund, raising capital, lending

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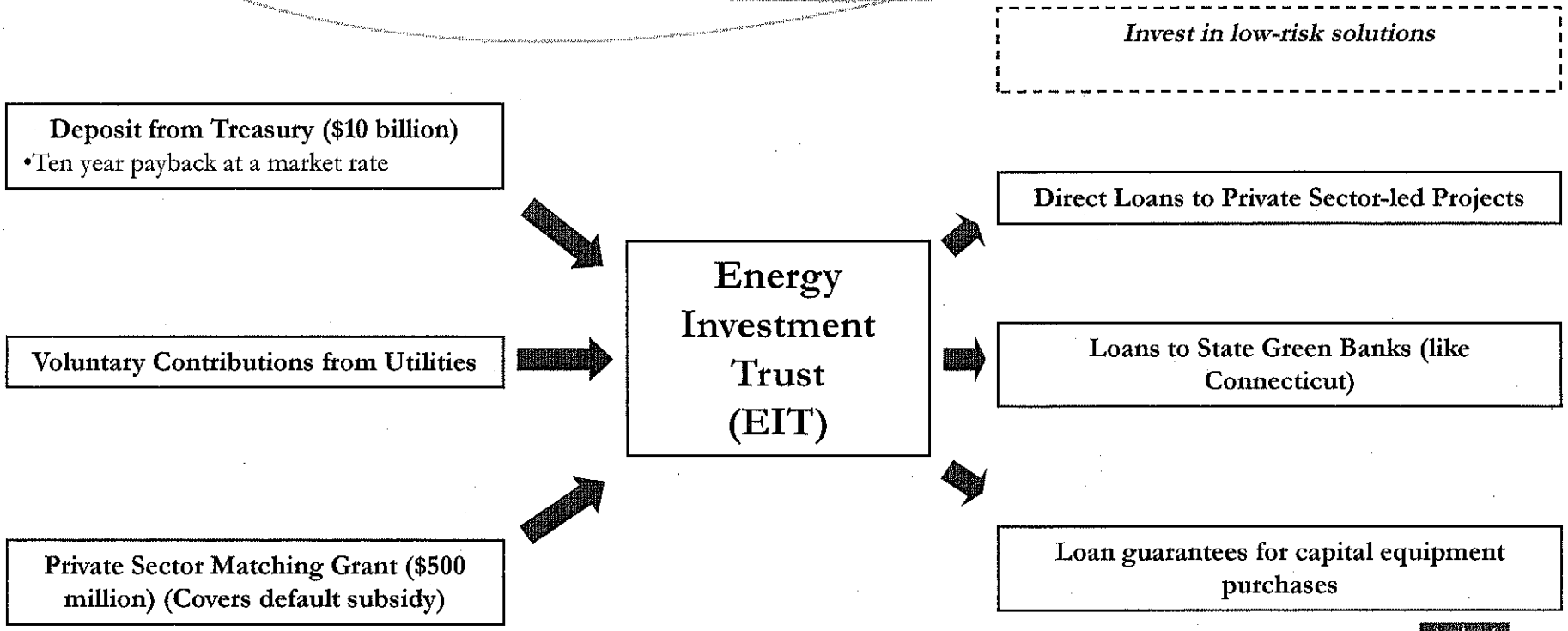
Connecticut Energy Investment Fund could also be funded by a national Energy Investment Trust



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The benefits of low-cost, long-term finance are clear: Solar

Assumptions:		Market Financing	EIT Financing
CAPEX - Northeast (Rhode Island)	[$/kW]	$4,180	$4,180
CAPEX - Plains (Kansas)	[$/kW]	$4,190	$4,190
CAPEX - Southwest (Arizona)	[$/kW]	$4,190	$4,190
Tenor	Years	10	20
Solar Case/Coverage	DSCR	1.40x	1.30x
Interest Rate	[%]	6.8%	4.5%
Balance at Maturity		Balance Fully Repaid	Balance Fully Repaid
IRR to Equity (Leveraged)		11.0%	11.0%
Revenue Requirement (2012 Power Price) @ 2% Escalation			
Northeast	[$/MWh]	$152/MWh	$118/MWh
Plains	[$/MWh]	$140/MWh	$109/MWh
Southwest	[$/MWh]	$112/MWh	$87/MWh

Notes:
- CAPEX is the EPC price of a solar photovoltaic system priced at $3.75/W, plus $.25/W debt service reserves, $.08/W development expenses, $.04/W financing fees, $.06/W for interest during construction, working capital, and maintenance reserves.
- Project is depreciated using MACRS, and assumes a 30% investment tax credit
- Both projects assume the same system sizes, production, O&M, etc.
- Production estimates for each region:
  Northeast: 1208 kWh/kWp 13.8% NCF
  Plains: 1382 kWh/kWp 15.8% NCF
  Southwest: 1675 kWh/kWp 19.1% NCF
- Assumes a 1MW distributed generation project.

- **Low-cost financing reduces the delivered electricity prices of solar photovoltaic projects by 20-25%, this puts solar within striking distance of current peak power prices, and generates electricity at the time when its most needed (peak hours) at the location where its most needed (close to the load).**
- With low-cost financing provided by the Energy Independence Trust, the investors' internal rate of return can be maintained while keeping the cost to consumers at or below current delivered peak power prices. The cost of delivered electricity is reduced by $25-34/MWh because of low-cost financing offered in the right column versus currently available bank financing in the left column.

The benefits of low-cost, long-term finance are clear: Wind

Assumptions:		'Market' Financing	EIT Financing
Capex - East	[$/kW]	$1,963	$1,963
Capex - Plains	[$/kW]	$1,813	$1,813
Capex - West	[$/kW]	$1,739	$1,739
Tenor	years	10	20
Wind Case / Coverage	DSCR	P50 wind @ 1.4x free cashflow	P50 wind @ 1.3x free cashflow
Interest Rate (1)	[%]	6.75%; LIBOR + 300 bps	4.5%; Treasury + 65 bps
Amortization Schedule		Equal over 10 years	Equal over 20 years
Balance at Maturity		Balance fully repaid	Balance fully repaid
Project leverage		20%	34%
IRR to Equity (leveraged)		11.0%	11.3%
Revenue Requirement - 2012 Power Price @ 2% annual escalation			
- East - @ 35% NCF	[$/MWh]	$70/MWh	$57/MWh
- Plains - @ 44% NCF	[$/MWh]	$50/MWh	$40/MWh
- West - @ 38% NCF	[$/MWh]	$55/MWh	$45/MWh

Prepared by an energy investment firm using public data sources

Notes:
- -Assumes that all after-tax free cashflows from the project are financeable, net of cover ratios
- -CAPEX costs do not include significant transmission system upgrades
- -The CAPEX here is based on reported project cost data for the ARRA grant program through November 2009, with a 10% discount to account for reductions in equipment costs since 2009 in projects being built in 2011 and 2012 timeframe
- -The two cases describe the identical project, but commercial banks will finance a more conservative wind case (requiring the 1.4x cover ratio)
- -The two cases assume the sale of identical quantities of electricity
- - Note (1): LIBOR rate based on LIBOR swap curve for last 5 years, Treasury based on rates for the same period.

Low-cost financing reduces the delivered electricity prices of these actual wind projects (above) by 15-20%; to the point of being cost-competitive with new-build conventional coal and gas-fired power plants in each region to meet incremental energy demand growth:

•With low-cost financing provided by the Energy Independence Trust, the internal rate of return can be maintained while keeping the cost to consumers at or below current delivered electricity costs (see highlighted sections above, where the cost of delivered electricity is reduced by $10/MWh because of the low-financing offered in the right column versus available bank financing in the left column).