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CLEAN ENERGY
FINANCE AND INVESTMENT AUTHORITY

May 11, 2012

Dear Clean Energy Finance and Investment Authority Board of Directors:

We are looking forward to the next Board of Directors meeting on Friday, May 18, 2012 from 9:00 to 11:00 a.m. at our offices located at 865 Brook Street Rocky Hill, CT. It has been awhile since we've met and we look forward to updating you on all the work that has been occurring at the committee level.

We have a full agenda which includes:

- Updates from all 4 committees: Audit Compliance and Governance, Budget and Operations, Technology Innovation, and Deployment;
- A discussion and review of a Deployment Committee proposal to modify the Residential Solar Investment Program; and
- A personnel discussion

If you have any questions, comments or concerns, please feel free to contact me at any time.

We look forward to the meeting next week.

Sincerely,

Bryan Garcia
President and CEO

CLEAN ENERGY
FINANCE AND INVESTMENT AUTHORITY

AGENDA

Board of Directors of the
Clean Energy Finance and Investment Authority
865 Brook Street
Rocky Hill, CT 06067

Friday, May 18, 2012 – Regular Meeting
9:00-11:00 a.m.

Staff Invited: George Bellas, Mackey Dykes, Brian Farnen, Bryan Garcia, David Goldberg, Dale Hedman, Sue Kaswan, David Ljungquist, Loyola French and Kim Stevenson

1. Call to order

2. Public Comments – 10 minutes

3. Approval of meeting minutes for March 16, 2012* – 5 minutes

4. Update from the President – 5 minutes

5. Budget and Operations Committee updates – 10 minutes

6. Technology Innovations Committee updates and recommendations for approval – 20 minutes

   - Recommend approval of funding for Ground Source Heat Pump program evaluation

7. Deployment Committee updates and recommendations for approval – 20 minutes

   - Recommend approval of proposed modifications to the Residential Solar Investment Program*

8. Audit Compliance and Governance Committee updates and recommendations for approval* – 20 minutes

   - Present resolution on Ethics Compliance Officer*
   - Present Board Ethics Policy and resolution*
   - Present Ethics Statement and Staff Ethics Policy and resolution*
   - Present revised By-Laws and resolution*

9. Executive Session to discuss personnel matters – 20 minutes

10. Other Business* – 5 minutes

11. Adjourn

* Denotes item requiring Board action

Call-in information: 1-877-885-3221 access code: 8446562

Next Meeting: Monday, June 18, 2012 from 1:00-3:00 p.m.
Clean Energy Finance and Investment Authority, 865 Brook Street, Rocky Hill, CT

RESOLUTIONS

Board of Directors of the
Clean Energy Finance and Investment Authority
865 Brook Street
Rocky Hill, CT 06067

Friday, May 18, 2012 – Regular Meeting
9:00-11:00 a.m.

Staff Invited: George Bellas, Mackey Dykes, Brian Farnen, Bryan Garcia, David Goldberg, Dale Hedman, Sue Kaswan, David Ljungquist, Loyola French and Kim Stevenson

1. Call to order

2. Public Comments – 10 minutes

3. Approval of meeting minutes for March 16, 2012* – 5 minutes

   Motion to approve the minutes of the Board of Directors March 16, 2012 Regular Meeting. Second. Discussion. Vote.

4. Update from the President – 5 minutes

5. Budget and Operations Committee updates – 10 minutes

6. Technology Innovations Committee updates and recommendations for approval – 20 minutes

   - Recommend approval of funding for Ground Source Heat Pump program evaluation

   RESOLVED:

   (1) that the Clean Energy Finance and Investment Authority (CEFIA) has determined that funding for a Ground Source Heat Pump Program Evaluation (Project) is consistent with the CEFIA's Comprehensive Plan and in the interests of ratepayers;

   (2) that funding be approved for Project expenses incurred subsequent to Board approval of this request, up to 50% of the Project's expected cost, in an amount not-to-exceed One Hundred Sixty-Eight Thousand Nine Hundred Forty-Two and 50/100 Dollars ($168,942.50);

(3) the President of CEFIA; and any other duly authorized officer of CEFIA, is authorized to execute and deliver, not later than May 31, 2012, any contract or other legal instrument necessary to effect the funding for the Project on such terms and conditions as he or she shall deem to be in the interests of CEFIA and the ratepayers; and

(4) that the proper CEFIA officers are authorized and empowered to do all other acts and execute and deliver all other documents as they shall deem necessary and desirable to effect the above-mentioned legal instrument.

7. Deployment Committee updates and recommendations for approval – 20 minutes

- Recommend approval of proposed modifications to the Residential Solar Investment Program*

RESOLUTION

WHEREAS, Section 106 of Public Act 11-80 "An Act Concerning the Establishment of the Department of Energy and Environmental Protection and Planning for Connecticut's Energy Future" (the Act) requires Clean Energy Finance and Investment Authority (CEFIA) to design and implement a Residential Solar Photovoltaic Investment Program (Program Plan) that results in a minimum of thirty (30) megawatts of new residential PV installation in Connecticut before December 31, 2022.

WHEREAS, pursuant to Section 106 of the Act, CEFIA has prepared a Program Plan and a declining incentive block schedule ("Schedule") that offer directs financial incentives, in the form of performance-based incentives or expected performance-based buydowns, for the purchase or lease of qualifying residential solar photovoltaic systems.

WHEREAS, the Deployment Committee recommends to the CEFIA Board of Directors (the "Board") to revise Step 2 of the Schedule to (1) address the findings from the program data obtained since approval of the original incentive schedule,(2) address changes in the solar market ascertained since approval of the original incentive schedule which would affect the expected return on investment for a typical residential solar photovoltaic system under the performance based incentive model by twenty percent or more, and (3) ensure that third party financing companies enter the market to help serve the low and middle income markets.

NOW, therefore be it:

RESOLVED, that the Board approves the revised Schedule of Incentives as recommended by the Deployment Committee.

RESOLVED, that the Board approves of a Step 2 budget increase of five million dollars to a total of ten million dollars.

RESOLVED, that this Board action is consistent with Section 106 of the Act.

8. Audit Compliance and Governance Committee updates and recommendations for approval* – 20 minutes

- Present resolution on Ethics Compliance Officer*

WHEREAS, Section 1-101rr(a) State of Connecticut Code of Ethics for Public Officials requires the Clean Energy Finance and Investment Authority (CEFIA) to designate an ethics compliance officer to be responsible for the development of the ethics policies, to coordinate ethics training programs and to monitor ethics policy compliance;

WHEREAS, pursuant to Section 5.3.1 (vi) of the CEFIA Bylaws, the Audit, Compliance and Governance Committee recommends Brian Farnen, General Counsel of CEFIA, as CEFIA's ethics compliance officer;

NOW, therefore be it:

RESOLVED, that the CEFIA Board of Directors hereby approves of Brian Farnen, General Counsel of CEFIA, as CEFIA's ethics compliance officer.

- Present Board Ethics Policy and resolution*

WHEREAS, Section 1-101rr(a) State of Connecticut Code of Ethics for Public Officials requires the ethics compliance officer of the Clean Energy Finance and Investment Authority (CEFIA) to develop the ethics policies of CEFIA;

WHEREAS, pursuant to Section 5.3.1 (viii) of the CEFIA Bylaws, the Audit, Compliance and Governance Committee has reviewed and recommends to the CEFIA Board of Directors (the "Board") the attached Clean Energy Finance and Investment Authority Board of Directors and Advisory Committee Members Ethical Conduct Policy;

NOW, therefore be it:

RESOLVED, that the Board hereby approves the attached Clean Energy Finance and Investment Authority Board of Directors and Advisory Committee Members Ethical Conduct Policy.

- Present Ethics Statement and Staff Ethics Policy and resolution*

WHEREAS, Section 1-101rr(a) State of Connecticut Code of Ethics for Public Officials requires the ethics compliance officer of the Clean Energy Finance and Investment Authority (CEFIA) to develop the ethics policies of CEFIA;

WHEREAS, pursuant to Section 5.3.1 (viii) of the CEFIA Bylaws, the Audit, Compliance and Governance Committee has reviewed and recommends to the CEFIA Board of Directors (the "Board") the attached Clean Energy Finance and Investment Authority Ethical Conduct Policy and Ethics Statement;

NOW, therefore be it:

RESOLVED, that the Board hereby approves the attached Clean Energy Finance and Investment Authority Ethical Conduct Policy and Ethics Statement.

- Present revised By-Laws and resolution*

WHEREAS, the Clean Energy Finance and Investment Authority (CEFIA) Board of Directors (the “Board”) approved CEFIA’s By-Laws pursuant to Section 16-245n of the Connecticut General Statutes on August 3, 2011 and made subsequent revisions on September 29, 2011;

WHEREAS, the Board intends to revise the By-Laws to clarify the Deployment Committee’s and Technology Innovation Committee’s authority to approve funding requests consistent with CEFIA’s new financing mission;

NOW, therefore be it:

RESOLVED, that the Board hereby approves the attached revised CEFIA By-Laws dated May 18, 2012.

9. Executive Session to discuss personnel matters – 20 minutes

10. Other Business* – 5 minutes

11. Adjourn

* Denotes item requiring Board action

Call-in information: 1-877-885-3221 access code: 8446562

Next Meeting: Monday, June 18, 2012 from 1:00-3:00 p.m.
Clean Energy Finance and Investment Authority, 865 Brook Street, Rocky Hill, CT

CLEAN ENERGY
FINANCE AND INVESTMENT AUTHORITY

Board of Directors of the Clean Energy Finance and Investment Authority

Agenda Item #1

Call to Order

May 18, 2012

CLEAN ENERGY
FINANCE AND INVESTMENT AUTHORITY

Board of Directors of the Clean Energy Finance and Investment Authority

Agenda Item #2

Public Comments

May 18, 2012

CLEAN ENERGY
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Board of Directors of the Clean Energy Finance and Investment Authority

Agenda Item #3

Approval of Meeting Minutes of March 16, 2012

May 18, 2012

CLEAN ENERGY
FINANCE AND INVESTMENT AUTHORITY

Board of Directors of the Clean Energy Finance and Investment Authority

Agenda Item #4

Update from the President

May 18, 2012

Update from the President

CLEAN ENERGY
FINANCE AND INVESTMENT AUTHORITY

- **Colebrook Wind Farm** – a predevelopment loan from the CCEF to BNE Energy

- **Matchmaking Forum** – an event organized by CEFIA with its partners REEBA and the CBA

CLEAN ENERGY
FINANCE AND INVESTMENT AUTHORITY

Board of Directors of the Clean Energy Finance and Investment Authority

Agenda Item #5

Budget and Operations Committee

May 18, 2012

Budget and Operations Committee
Updates

CLEAN ENERGY FINANCE AND INVESTMENT AUTHORITY

- Conducted a program review of programs from the previous comprehensive plan

37	• Programs/Initiatives from Budget
26	• Actual Programs with FY12 Budget
8	• Recommendation to Continue

Budget and Operations Committee
Next Steps

CLEAN ENERGY FINANCE AND INVESTMENT AUTHORITY

- The Budget & Operations committee will continue to review and refine the proposed FY2013 budget and present a recommendation at the June board meeting

Board of Directors of the Clean Energy Finance and Investment Authority

Agenda Item #6

Technology Innovations Committee

May 18, 2012

Technology Innovation Committee
Mandate and Responsibilities

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- Commissioner Smith established the Technology Innovation Committee as a vehicle to transition the programs per CEFIA's Comprehensive Plan and has asked Dean Choi to Chair the committee
- Transition of CEFIA's Technology Innovation programs includes: phase-out, transition, or maintain
- CEFIA Bylaws provide the Technology Innovation Committee with the ability to make funding and oversight decisions

Technology Innovation Programs
Transition Plan Overview

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Alpha Program	Op Demo Program	Clean Tech Fund
Early stage technologies GRANT/ DEBT	Pre-commercial/ new to CT GRANT/ DEBT	Promising Companies EQUITY

Resource and Technology Assessments

Maintain
Technology assessments (as needed)
Resource assessments (as needed)

Technology Monitoring (phase out)
Fuel Cell Monitoring
Small Wind Monitoring

Infrastructure Support/ Strategic Analyses

Cluster development: CINE, CTO
CT Innovation Ecosystem Support
Participation on various industry boards and committees

Transition | Maintain | Phase Out

Transition Plan
Next Steps

- Current focus of transition effort is on existing Alpha and Op Demo pipeline, which will be transitioned to CI
- TI Committee supportive of program design and recommended Alpha investments; wants to ensure clear funding terms and transition mechanisms in place first
- Staff has been working with CI on the transfer and is close to finalizing terms for approval by the TI Committee
- Op Demo Program finalists currently in due diligence will be presented to the TI Committee shortly

Alpha Program Finalists

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- Seldera, LLC
  - Energy monitoring and management for commercial buildings
- Apollo Solar, Inc.
  - Solar PV inverter for grid-tied and off-grid operation
- Anchor Science, LLC
  - Nanomaterial for thermal energy management in electronics
- Scaled Liquid Systems, LLC
  - Liquid cooling for high performance computers

CEFIA Transition Messaging

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- State leadership is highly supportive of new technology innovation, which seeds the future clean energy economy
- CEFIA is evolving to become a Green Bank focused on financing scaled deployment of commercial technologies
- Early stage technology support is not core to CEFIA's goals and mandate; others are better positioned to do this work
- Connecticut has programs within CI and emerging programs within the CT Innovation Ecosystem to support CT's clean energy technology entrepreneurs

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Ground Source Heat Pump Evaluation Study:

- Conducted by KEMA/NMR, managed by the Energy Efficiency Fund
- CEFIA pays 50% of $337,885 cost ($168.942.50)
- Objectives:
  - Quantify results of both EEF and CEFIA/ARRA incentive programs
  - Assess program for improvements
  - Develop better understanding of market and potential for GSHPs in CT
- Methods:
  - Metering: 30 “spot” sites, 10 long-term (12 mos.) sites
  - Interviews: 100 customers, 10 installers
- Schedule: Start March, 2012; final report by March, 2013
- Approval recommended by TI Committee April 12, 2012

Technology Innovation Committee
Recommendation for Approval - Resolution

RESOLVED:

(1) that the Clean Energy Finance and Investment Authority (CEFIA) has determined that funding for a Ground Source Heat Pump Program Evaluation (Project) is consistent with the CEFIA's Comprehensive Plan and in the interests of ratepayers;

(2) that funding be approved for Project expenses incurred subsequent to Board approval of this request, up to 50% of the Project's expected cost, in an amount not-to-exceed One Hundred Sixty-Eight Thousand Nine Hundred Forty-Two and 50/100 Dollars ($168,942.50);

(3) the President of CEFIA; and any other duly authorized officer of CEFIA, is authorized to execute and deliver, not later than May 31, 2012, any contract or other legal instrument necessary to effect funding for the Project on such terms and conditions as he or she shall deem to be in the interests of CEFIA and the ratepayers; and

(4) that the proper CEFIA officers are authorized and empowered to do all other acts and execute and deliver all other documents as they shall deem necessary and desirable to effect the above-mentioned legal instrument.

CLEAN ENERGY
FINANCE AND INVESTMENT AUTHORITY

Board of Directors of the Clean Energy Finance and Investment Authority

Agenda Item #7

Deployment Committee

May 18, 2012

Deployment Committee

Updates and Recommendations for Approval

- **Onsite Distributed Generation Programs** – approved projects to begin phase-out of these programs as the market transitions to the ZREC-LREC policy

- **Residential Solar Investment Program** – update and recommendation of Deployment Committee and staff approval of proposed program modifications for Step 2

Onsite Distributed Generation Programs
Update

- **<u>Programs in Transition</u>** – best of class onsite distributed generation program, final round of incentives as we transition to ZREC-LREC market

- **<u>Solar PV</u>** – approved 7 projects with total installed capacity of 1.67 MW at $3.0 million of incentives; projects less than 100 kW to be recommended to Deployment Committee

- **<u>Fuel Cells</u>** – approved 2 projects with total installed capacity of 1.00 MW at $1.5 million of incentives; $2.0 million left for projects to be recommended to Deployment Committee

Residential Solar Investment Program
Update

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- **Customer Acquisition** – 208 applications received in two months for 1.4 MW installed capacity – 6.7 kW average size and between 25 to 30 applications per week
  - Over 90% of applications are rebates vs. 10% for PBI
  - Massachusetts is at 50 to 60 applications per week with 6.1 kW average size
- **Installed Cost** – average installed cost of $5,285/kW – rebate at $5,340/kW and PBI at $4,800/kW
  - Massachusetts is at $5,020/kW installed (e.g. Block 9)
- **Incentive Level** – average incentive level of $1,775/kW (not $2,450/kW)
  - Massachusetts incentives are more – upfront rebate from MassCEC at $0.40/W (not including adders), SREC at $300/kWh for 4 year contract (can receive SREC value up to 10 years), and a state tax credit of $1,000

Residential Solar Investment Program

Step 1 Incentive Distribution

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Step 1

$2,500,000 Budget

Actual
$2,206,113
1,247 kW
89%

Rebate Track

Estimate
$1,250,000
630 kW

PBI Track

Estimate
$1,250,000
630 kW

Actual
$261,757
145 kW
11%

- Amount of Rebate incentives

- Amount of PBI incentives

Change in the development in the solar market

Residential Solar Investment Program
Proposals Reviewed by Deployment Committee

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1. **Separate Incentives** – separate the two competing incentive models so firms participating within each model compete against each other **(UNANIMOUS CONSENT)**

2. **Extend the Runway** – establish fixed volumes of installations for each incentive model (i.e. 2.8 MW each) by a certain date (April 1, 2013), whichever is reached first – will require $5 million additional allocation **(UNANIMOUS CONSENT)**

3. **Modify Incentive Schedule** – maintain the PBI at $0.300/kWh and reduce the rebate to $2.275/W instead of $2.100/W to maintain "comparable economic incentives"

4. **Financing Road Show** – initiate discussions with firms about a workable loan product model in addition to grants **(UNANIMOUS CONSENT)**

Statute

PA 11-80 Section 106 (c)(5)

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- …and (5) provide comparable economic incentives for the purchase or lease of qualifying residential solar photovoltaic systems.

Comparisons

NPV of Incentive Analysis (Step 1)

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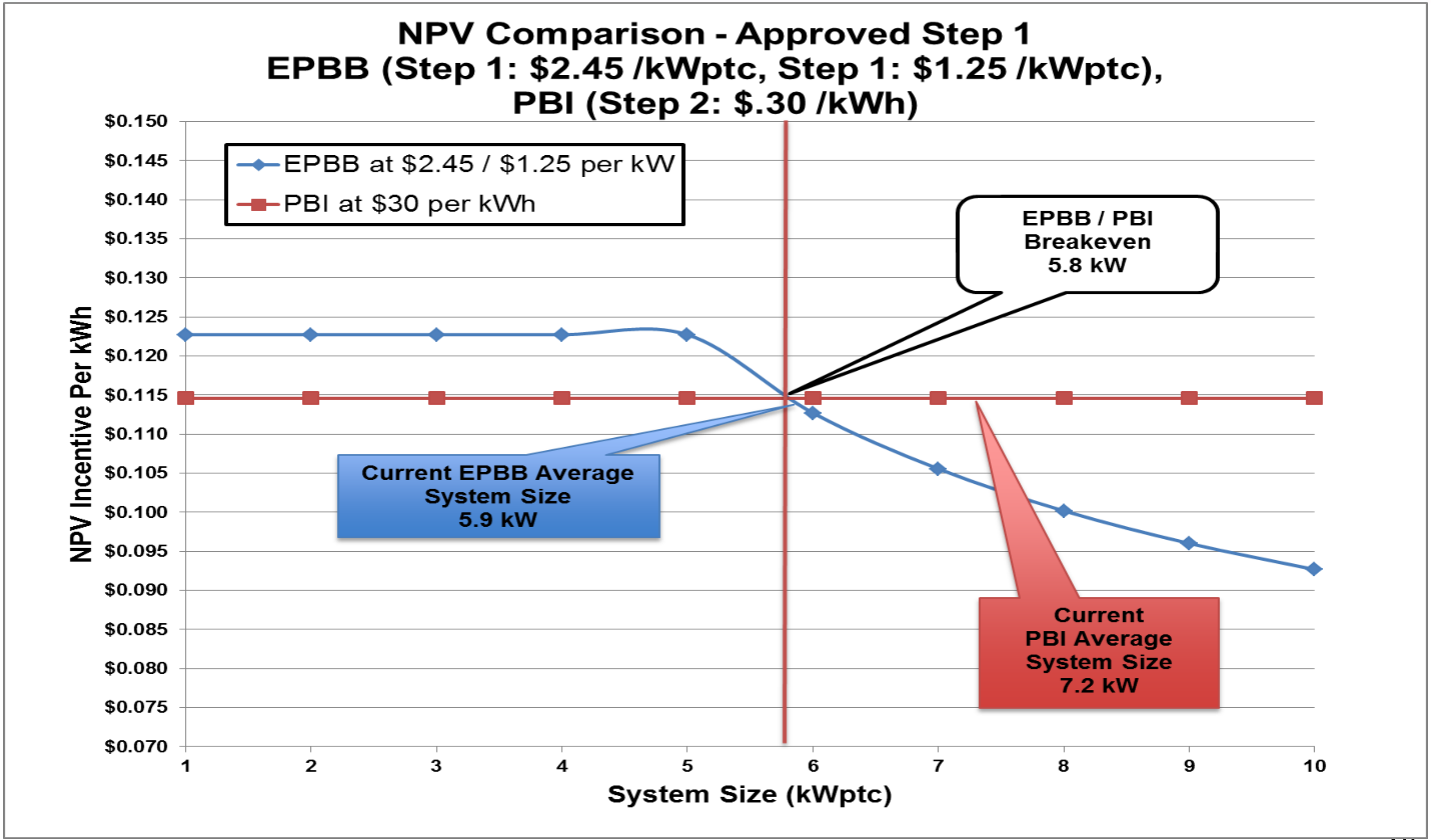
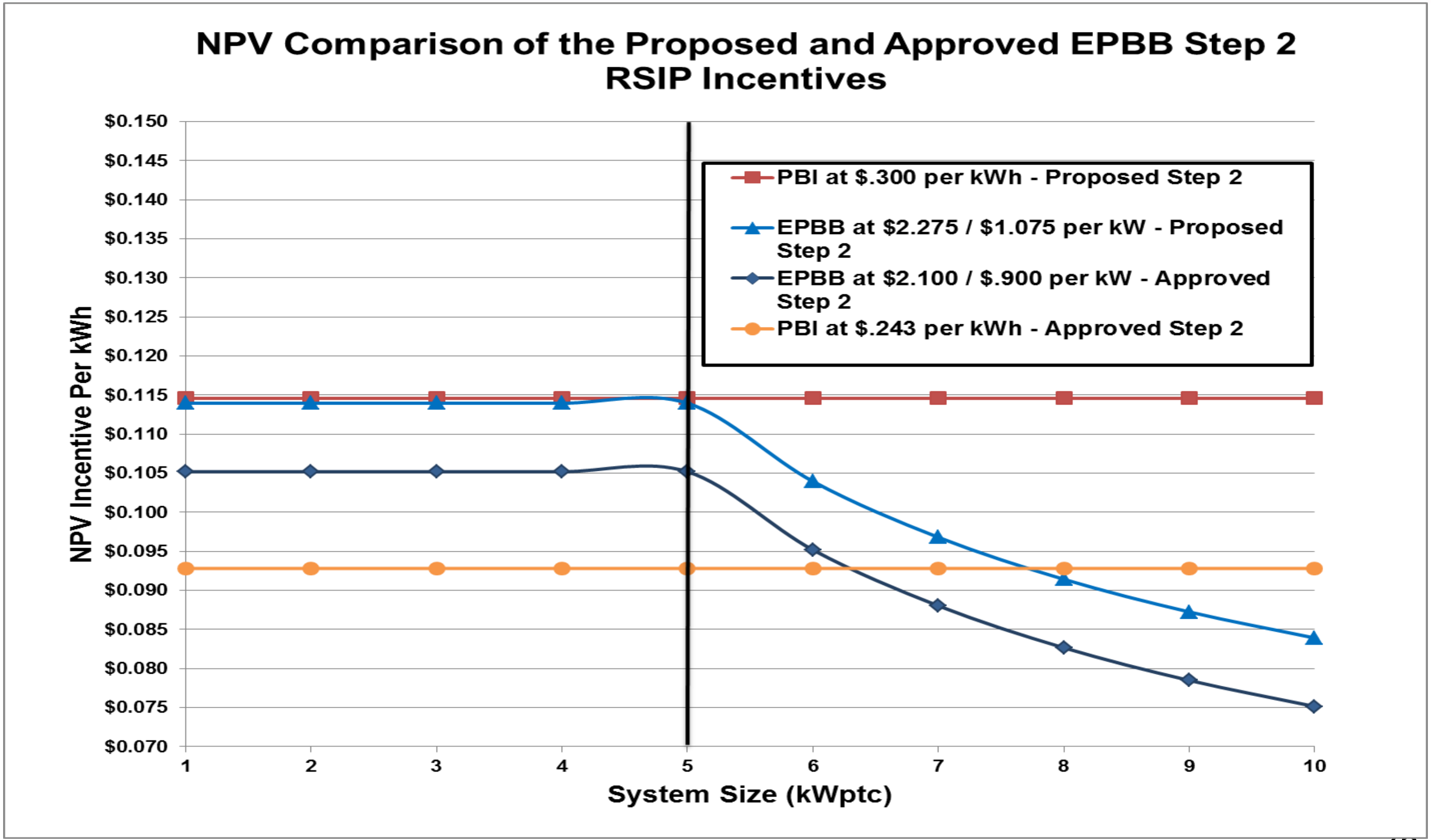


Comparisons

NPV of Incentive Analysis (Step 2 – Comparisons)



Comparisons

NPV of Incentive Analysis – CT vs. MA

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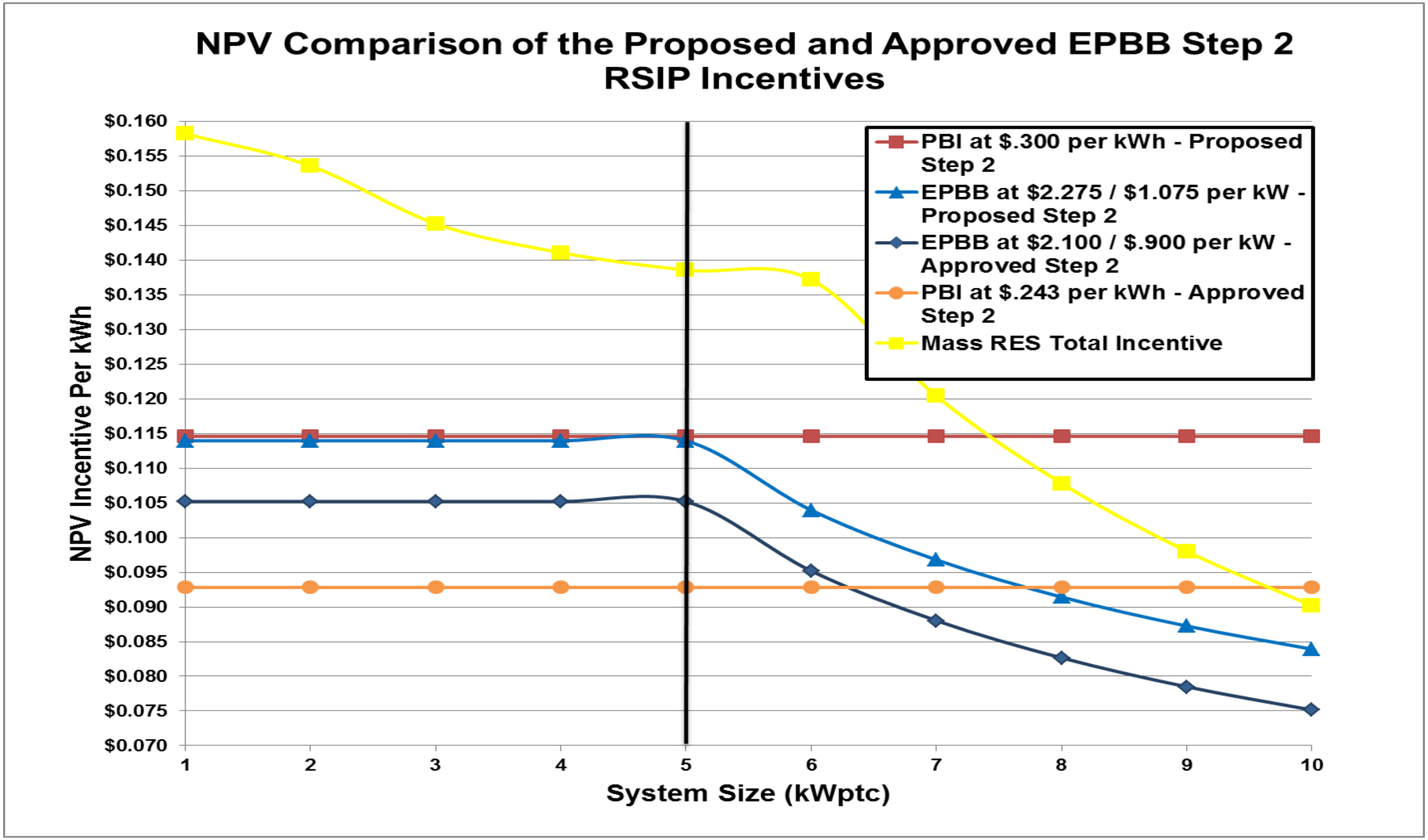

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Board of Directors of the Clean Energy Finance and Investment Authority

Agenda Item #8

Audit, Compliance and Governance Committee

May 18, 2012

Audit, Compliance and Governance Committee
Updates and Recommendations for Approval

CLEAN ENERGY
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- **ACG committee has three recommendations to the full board.**
  1. Appoint Brian Farnen, General Counsel, as the ethics compliance officer;
  2. Approve the board ethics policy; and
  3. Approve the staff ethics policy.
     - Both ethics policies were prepared by CEFIA’s General Counsel and reviewed by the office of State Ethics.
     - CEFIA’s staff ethics policy is based off CI’s staff policy.
- **Revisions to By-laws to better align the Deployment and Technology Innovation committees approval authority with CEFIA’s new financing mission.**

CLEAN ENERGY
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Board of Directors of the Clean Energy Finance and Investment Authority

Agenda Item #9

Executive Session – Personnel Matters

May 18, 2012

CLEAN ENERGY
FINANCE AND INVESTMENT AUTHORITY

Board of Directors of the Clean Energy Finance and Investment Authority

Agenda Item #10

Other Business

May 18, 2012

Other Business
Updates and Recommendations for Approval

- **CCEF Draft Meeting Minutes** – old meeting minutes of June 20, 2011 of the CCEF board of directors need approval

- **Legislative Session** – update on the session

CLEAN ENERGY
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Board of Directors of the Clean Energy Finance and Investment Authority

Agenda Item #11

Adjourn

May 18, 2012

Subject to changes and deletions

CLEAN ENERGY FINANCE AND INVESTMENT AUTHORITY
Board of Directors
Draft Minutes – Regular Meeting
Friday, March 16, 2012

A regular meeting of the Board of Directors of the **Clean Energy Finance and Investment Authority (the "CEFIA")** was held on March 16, 2012, at the office of CEFIA, 865 Brook Street, Rocky Hill, CT.

1. **Call to Order**: Catherine Smith, Chairperson of CEFIA, called the meeting to order at 9:05 a.m. Board members participating: Mun Choi; Mark Cirilli; Daniel Esty, Vice Chairperson of CEFIA and Commissioner of the Department of Energy and Environmental Protection; Norma Glover; Jonathan Harris, State Treasurer's Office; Reed Hundt (by phone); John Olsen; Matthew Ranelli; Catherine Smith, Chairperson of CEFIA and Commissioner of the Department of Economic and Community Development.

Member Absent: Patricia Wrice.

Staff Attending: Jocelyn Anastasiou, Christin Cifaldi, Mackey Dykes, Brian Farnen, Keith Frame, Bryan Garcia, David Goldberg, Dale Hedman, Dave Ljungquist, Shelly Mondo, Cheryl Samuels, and Bob Wall.

Others Attending: Jessica Bailey, the Rockefeller Brothers Fund; Chris Bernard, Northeast Utilities; Peggy Diaz, Department of Energy and Environmental Protection; Katie Dykes, Department of Energy and Environmental Protection; Richard Dzindul, Pemberton Renewables, Dot Kelly, Shearwater Design; Donald Kirshbaum, State Treasurer's Office; Carl Koch, Alternative Energy Outlet; Bob Lamb, Lamont Financial Services; Henry Link, EnviroEnergy; Stephen Possidento, PTE Energy; Richard Shaw, UTC Power; Peter Tavino; Shinu Thomas, PTE Energy; Michael Trahan, Solar Connecticut;

2. **Public Comments:**

Peter Tavino, a geothermal installer, read a prepared statement regarding the Geothermal program.

3. **Approval of Minutes of Meeting of February 14, 2012:**

Ms. Smith asked the Board to consider the minutes from the February 14, 2012 meeting. Mr. Harris asked that the spelling of his name be corrected throughout the minutes.

> **Upon a motion made by Mr. Esty, seconded by Mr. Olsen, the Board members voted unanimously in favor of adopting the minutes from the February 14, 2012 meeting as corrected.**

4. Update from the President:

Mr. Garcia reported on the statewide clean energy, branding, marketing and outreach campaign. He mentioned that CEFIA is working with the Clean Energy Efficiency Fund and the Department of Energy and Environmental Protection ("DEEP") to administer the Request for Proposals and selection process. He commended Bob Wall, John Murphy and Gladys Rivera for their support of the RFP process. Mr. Garcia mentioned that Jocelyn Anastasiou will be leaving CEFIA, and he acknowledged her work and dedication. She will be taking up formal education and workforce development programs at UI. He provided an update on the search for an Executive Vice President and discussed the process to screen candidates. A concern was expressed with the proposed process of having staff screen the candidates and a suggestion was made to create a subcommittee of the Board to help with the process. Mr. Esty, Ms. Smith and Mr. Hundt were interested in helping Mr. Mackey and Mr. Garcia.

Mr. Garcia provided an update on CEFIA's efforts to reach out to local banks. He mentioned that most of the banks visited were not aware of the clean energy efforts in Connecticut but are willing to learn more about investing in clean energy and co-investing in projects. Mr. Garcia stated that the banks are also interested in Community Reinvestment Act credits.

Mr. Garcia noted that a follow-up matchmaking forum will be held on May 3 to continue to talk about clean energy and ways to bring together developers and financiers to further Connecticut's energy, environmental and economic development objectives.

Mr. Garcia mentioned that staff continues to focus on repurposing the ARRA funding for the Solar Thermal Program to ensure that the funding is spent by the April 30, 2012 deadline. He acknowledged and thanked DEEP and the Department of Energy for their assistance with repurposed the funds and getting contracts in place. He specifically thanked Ray Wilson, Sean Condon, and Ann Kerr for their support through this process. Mr. Esty urged staff to finalize the repurposing efforts in the next two weeks so that the transaction is completed in sufficiently in advance of the April 30 deadline.

Mr. Esty introduced Katie Dykes who was recently appointed as acting deputy commissioner at DEEP.

5. Solar Thermal Program Status and Funding Request:

Mr. Garcia mentioned the legislative leaders and installers have requested that CEFIA consider an extension of the Solar Thermal Program to deal with the existing pipeline of projects. Based on the feedback received, staff is recommending a 3-month extension of the Solar Thermal Program that was developed for the ARRA funding while staff develops a more substantive program. Mr. Ljungquist indicated that the proposed interim program would provide a smooth transition from the rebate-based program to a program that will lead to minimal grants and maximum reliance on financing. He reviewed the history of the Solar Thermal Program developed for the ARRA funding. Mr. Ljungquist mentioned that under the ARRA-funded Solar Thermal Program 72 commercial projects were approved, and 207 residential projects were approved.

Mr. Ljungquist discussed the proposed interim 3-month solar thermal program to fund the projects in the pipeline. He noted that staff proposes an extension of the existing program with some significant revisions to the commercial rebate levels to address lessons learned. Mr. Ljungquist stated that staff recommends the same incentive levels for the applicants in the pipeline and the revised incentives for new applicants. Some concern was expressed by the Board that the incentive level proposed for the interim program for the commercial projects is too high. The Board discussed how to proceed to support the industry while not over-subsidizing the interim program. A suggestion was made to have the commercial process competitive, and there was general consensus that CEFIA should be moving from a subsidy model to a more competitive financing model.

There was consensus to authorize staff to proceed with funding the interim residential program for a total of $300,000 and to amend the interim program for commercial projects so that the commercial projects in the pipeline have to compete for up to $2,000,000 of funding rather than the recommended $3,000,000.

RESOLVED:

(1) that the Clean Energy Finance and Investment Authority ("CEFIA") has determined that funding for a Solar Thermal Rebate Program (the "Program"), is consistent with CEFIA's Comprehensive Plan and in the interests of the ratepayers, and that funding be approved for the Program in an amount not-to-exceed Two Million Three Hundred Thousand Dollars ($2,300,000) consisting of up to $300,000 for residential projects and up to $2,000,000 for non-residential projects;

(2) the President of CEFIA and any other duly authorized officer of CEFIA is authorized to execute and deliver, not later than March 30, 2012 for residential projects and April 30, 2012 for non-residential projects, any contract or other legal instrument necessary to implement this resolution on such terms and conditions as he or she shall deem to be in the interests of CEFIA and the ratepayers; and

(3) that the proper CEFIA officers are authorized and empowered to do all other acts and execute and deliver all other documents as they shall deem necessary and desirable to effect the above-mentioned legal instrument.

6. <u>Residential Solar Investment Program—Update</u>:

Ms. Cifaldi provided an update on the Residential Solar PV Investment Program. She mentioned that the program was launched on Friday, March 2, 2012; and to date, 66 applications have been received, of which 61 have been approved and 5 require additional documentation or clarification. The total capacity of the 66 applications is 424.3kW_{STC}. Ms. Cifaldi stated that as of March 15, 2012 no third-party companies have submitted performance-based incentive applications. Mr. Esty mentioned that he has received positive feedback on the launching of the program and expeditious approval process by CEFIA staff. Mr. Garcia indicated that all systems approved under the program are required to install monitoring systems so CEFIA may actively track real-time kWh production. He stated that staff has also begun to collect information about jobs for each residential PV project. After the data is collected, staff will prepare a jobs report for the Board to help understand the economic values of the projects and programs. In response to a question, Ms. Cifaldi stated that all contractors are required to have at least one full-time employee with an E-1 license or hire a subcontractor with an E-1 license. Staff was asked to report how many contractors have subcontractors with E-1 licenses.

Mr. Garcia explained the two different models under the program. He noted that while no performance based incentives have yet been requested or reserved, having the two models encourages competition. The Board asked for regular updates on the program.

7. <u>Budget Update</u>:

Mr. Esty mentioned that the Budget and Operations Committee ("Budget Committee") met on March 14 and reviewed a preliminary comprehensive budget and cash flow projections for fiscal year 2012. He indicated that the Budget Committee asked staff to break out certain information for each of the 37 CEFIA programs. Mr. Esty noted the importance of the Budget Committee and Board understanding each of the programs, CEFIA's priorities and how to allocate funding to each of the programs. The Board asked that an additional column be added to the financial statements to show the year-to-date budget. Mr. Esty mentioned that staff was also asked to develop a data management system that could provide daily, weekly, monthly and quarterly financial reports. In response to a question, Mr. Bellas stated that revenues and expenses are tracking budget projections. He noted however that the warmer than typical winter weather may impact ratepayer assessments. The Board members cautioned about spending more than revenues received each year even though there are unspent funds from previous years that can be carried forward.

Staff was encouraged to continue sharing administrative resources and staff with CI and to be as efficient as possible.

8. <u>Comprehensive Plan Discussion</u>:

Mr. Garcia noted that as a result of the change in focus for CEFIA to attract and deploy clean energy in Connecticut, some of its existing programs may fit better at another state agency, quasi-public agency or organization. He indicated that if current programs are inconsistent with CEFIA's new direction, he will work with Mr. Dykes and the Budget Committee to ensure that the programs are transitioned to another organization or phased out. In response to a question, Mr. Garcia briefly explained how CEFIA intends to comply with statutory requirements even with the phasing out of certain programs.

Mr. Garcia reviewed CEFIA's vision, mission and goals. A suggestion was made to include the words "cleaner and cheaper" energy in the goals. Mr. Garcia provided an overview of the Comprehensive Plan, explaining the programs that may no longer be necessary or are not statutorily required, the programs required by statute and the new programs that are focused on attracting and deploying capital to finance the deployment of clean energy. A discussion ensued on some of the projects in the pipeline. Since there is no Technology Committee, the Board asked the Deployment Committee, if it is in compliance with CEFIA's Bylaws, to review and consider the projects during the transition period.

Mr. Garcia discussed the steps envisioned to determine which programs should remain, which should be transitioned to another organization and which should be phased out. A discussion ensued on the importance of technology innovation in Connecticut and CEFIA focusing on financing clean energy deployment. Some concern was expressed with ensuring that the transition of any programs is done in a diplomatic manner. The Board urged staff to proceed cautiously and to report back with a recommendation on the transition process. Mr. Garcia indicated that staff will work with the Budget Committee to make any proposed changes and bring forward a recommendation for consideration by the Board at the May meeting. The Board asked staff to keep them informed on any transitional issues.

Mr. Garcia talked about the importance of having a special capital reserve fund for CEFIA. Mr. Lamb from Lamont Financial Services, CEFIA's financial advisor, elaborated and explained how the State Capital Reserve Fund ("SCRF") is a potential tool available to CEFIA that could be used to lower the cost of capital for CEFIA. He explained that the SCRF can be used to act similar to a guarantee to investors and can help CEFIA achieve a better bond rating and borrow at lower rates in the capital markets. Mr. Lamb indicated that the Treasurer's office will be required to sign off on all CEFIA bond financings; and statutorily, CEFIA has the ability to issue up to $100,000,000 of bonds. Mr. Lamb was asked to provide more information on the savings to CEFIA by utilizing the SCRF.

The Board discussed how to proceed with the Comprehensive Plan, and there was consensus to proceed with approving a preliminary Comprehensive Plan while acknowledging that revisions may be necessary.

> **Upon a motion made by Mr. Harris, seconded by Mr. Olsen, the Board voted in favor of adopting the following resolution regarding the Comprehensive Plan (Mr. Ranelli was not present for the vote):**

WHEREAS, Section 99 of Public Act 11-80 "An Act Concerning the Establishment of the Department of Energy and Environmental Protection and Planning for Connecticut's Energy Future" (the "Act") directs the Clean Energy Finance and

Investment Authority ("CEFIA") to develop a comprehensive plan to foster the growth, development and commercialization of clean energy sources, related enterprises and stimulate demand clean energy and deployment of clean energy sources that serve and use customers in this state;

WHEREAS, Section 99 of the Act directs CEFIA to support financing or other expenditures that promote investment in clean energy sources in accordance with a comprehensive plan;

WHEREAS, the Budget and Operations Committee will develop a program and operation budget to be recommended for approval by the Board of Directors for the approved Comprehensive Plan;

NOW, therefore, be it:

RESOLVED, that in accordance with the General Statutes of Connecticut Section 16-245n (d), the CEFIA Board of Directors approves the attached Comprehensive Plan for the implementation of clean energy programs and expenditures during the fiscal year 2013 through fiscal year 2015.

RESOLVED, that this action is consistent with Section 99 of the Act.

RESOLVED, that the proper CEFIA officers are authorized and empowered to do all other acts and execute and deliver all other documents as they shall deem necessary and desirable to effect this Resolution.

9. **<u>Adjournment</u>**: Upon a motion made by Mr. Olsen, seconded by Mr. Harris, the Board members voted unanimously in favor of adjourning the March 16, 2012 meeting at 11:12 a.m.

Respectfully submitted,

Catherine Smith, Chairperson

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CLEAN ENERGY
FINANCE AND INVESTMENT AUTHORITY

Memo

To: Board of Directors

From: Technology Innovation Committee, Brian Farnen and Dave Ljungquist

Date: May 11, 2012

Re: Request for Approval of Funding for Ground Source Heat Pump Program Evaluation

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INTRODUCTION

In December, 2009, the Connecticut Clean Energy Fund launched a Ground Source Heat Pump (GSHP, a.k.a. "geothermal" heat pump) Rebate program, using $5,000,000 in ARRA funds. The objective of the program was to reduce Connecticut's energy consumption by 50,500 MMBtu through the installation of about 360 geothermal systems. The program was conducted as a cooperative effort in parallel with the incentive program funded by the Connecticut Energy Efficiency Fund (CEEF) and run by the Connecticut Light & Power and United Illuminating utility companies.

In July of 2011, CEFIA was asked by the Energy Efficiency Board to participate in a study of the ground source heat pump systems installed in Connecticut under these incentive programs. We agreed in principle to share the cost of the study equally. On January 10, 2012, we received a final work plan (attached) from the KEMA/NMR team, which included a firm cost of $337,885. CEFIA's share at 50% is $168,942.50.

The study will provide valuable data on the quality of the geothermal installations subsidized by our programs, as well as the accuracy of the energy forecasting models used. In addition, feedback regarding the design of the programs can be used to improve future programs of all types, not just geothermal.

PROJECT DESCRIPTION

<u>Ground Source Heat Pump Study</u>

The objectives of the study include the following:

1. Quantify energy and peak demand savings of the GSHP program

2. Quantify improvements in air quality
3. Assess the program for potential improvements
4. Assess the market for GSHPs in Connecticut

Methodology - On-Site Sampling and Recruitment
Spot metering visits will be conducted among 40 participants. The sample will be drawn to reflect both the mix of different size GSHP systems as well as the types of backup heating systems. In addition, ten participants in the sample will be randomly selected for long-term metering. After the initial on-site visit, up to ten additional sites will be selected for a follow-up visit for conducting spot measurements to assess field recovery performance.

On-site Measurements

- Equipment nameplate information and operating characteristic data.
- Duct blaster and blower door tests
- Spot power and temperature measurements of the GSHP equipment and entering and leaving water temperature
- Collection of household characteristics (including insulation levels) for accurate modeling

Long-term Metering
Ten of the 40 sites will be randomly selected for long-term metering. The objective of the long-term metering will be to measure the performance of the GSHP in both the cooling and heating seasons.

Assessment of System and Condenser Loop Sizing
Using data collected during the testing at the 40 spot metering visits, the NMR team will perform a Manual J calculation to assess the process for sizing the GSHP systems and whether the units and condenser loops are sized properly.

Energy and Demand Savings Analysis

Using individual load models based on the metered data, site-level savings will be determined independently for cooling and heating operation. The environmental impact of these projects will also be evaluated and compared with program objectives.

Market Assessment

A key objective of the study is to provide the sponsors with clear understanding and insight into the future opportunities for GSHPs in Connecticut. A participant telephone survey will be conducted, as well as in-depth interviews with participating contractors.

Sample design
Telephone interviews will be conducted with 100 participants. This sample size should be sufficient to provide overall results with 90% confidence and +/-7.2% accuracy.

Survey Design
The following topics will be included in the interviews:

- Type and fuel of equipment considered as alternative to GSHP
- Reasons for purchase of GSHP
- Concerns about and obstacles to installing GSHP
- Sources for financial incentives
- Influence of program and incentives on decision to participate (free ridership)
- Satisfaction with GSHP system and with the program itself
- Demographic characteristics

Contractor Interviews
Ten in-depth telephone interviews will be conducted with geothermal contractors, targeting the most active contractors.

- Experience and level of satisfaction with GSHP program
- Reasons why customers decide not to install GSHP (besides cost)
- Differences between new construction and retrofit applications
- Estimates of equipment and installation costs
- Estimate of potential market size for GSHP installations

Deliverables
The deliverables for the GSHP study include the following:

- Impact Evaluation
- Participant Survey Results
- Contractor Interview Results
- Draft and final overall report
- Presentation of final results

Schedule
The study will begin in March, 2012 and the final report will be delivered in March, 2013.

Project Budget
This project will cost $337,885.

Recommendation
Staff feels this study will provide valuable information regarding effectiveness of the incentive programs for geothermal heat pumps, and will inform decisions about funding

similar programs in the future. Approval of the shared cost, in the amount of **$168,942.50**, is requested.

RESOLVED:

(1) that the Clean Energy Finance and Investment Authority (CEFIA) has determined that funding for a Ground Source Heat Pump Program Evaluation (Project) is consistent with the CEFIA's Comprehensive Plan and in the interests of ratepayers;

(2) that funding be approved for Project expenses incurred subsequent to Board approval of this request, up to 50% of the Project's expected cost, in an amount not-to-exceed One Hundred Sixty-Eight Thousand Nine Hundred Forty-Two and 50/100 Dollars ($168,942.50);

(3) the President of CEFIA; and any other duly authorized officer of CEFIA, is authorized to execute and deliver, not later than May 31, 2012, any contract or other legal instrument necessary to effect funding for the Project on such terms and conditions as he or she shall deem to be in the interests of CEFIA and the ratepayers; and

(4) that the proper CEFIA officers are authorized and empowered to do all other acts and execute and deliver all other documents as they shall deem necessary and desirable to effect the above-mentioned legal instrument.

Submitted by: David L. Ljungquist, Director – Energy Efficiency Deployment

Ground Source Heat Pump
Impact Evaluation & Market Assessment
Work Plan

DRAFT

Prepared for Connecticut Energy Efficiency Board
January 10, 2012

Experience you can trust.

1. Objectives

In this work plan, NMR and its partner KEMA (the NMR team) describe an impact evaluation and market assessment of residential ground source heat pumps (GSHP). The objectives of the study include the following:

1. Quantify energy and peak demand savings of the GSHP program
2. Quantify improvements in air quality
3. Assess the program for potential improvements
4. Assess the market for GSHPs in Connecticut

Table 1 presents an overview of research questions and the proposed tasks that feed into each objective; note that tasks may feed into multiple research questions as well as multiple objectives.

Table 1: Summary of Objectives, Research Questions, and Tasks

Objective	Research Questions	Tasks (# on-sites or surveys)
1. Quantify energy and peak demand savings of GSHP program	• What are the annual energy savings and peak demand savings of the program? • What would customers have done in the absence of the program? • How much influence did the program have on participants' decision to install GSHP systems?	• Task 2.1 - Spot metering (40) • Task 2.2 - Long-term metering (10) • Task 3 - Manual J Calculation • Task 5.1 - DOE 2 modeling • Task 6.2- Participant Surveys (100)
2. Quantify improvements in air quality	• What are the CO_2 and NO_x savings attributable to the program?	• Task 5.2 - Environmental Impact Analysis
3. Assess program for potential improvements	• Are systems being properly sized and installed? • Are all potential savings being captured by the program?	• Task 2.1 - Spot metering (40) • Task 2.2 - Long-term metering (10) • Task 2.3 - Follow-up spot metering (10) • Task 3 - Manual J Calculation • Task 5.1 - DOE 2 modeling

Objective	Research Questions	Tasks (# on-sites or surveys)
		• Task 6.1 - Contractor Interviews (10)
4. Assess market for GSHPs in Connecticut	• What is potential size of the market for GSHPs in CT? • Why do customers choose to install GSHPs? • What are the major barriers to GSHPs?	• Task 6.1 - Contractor Interviews (10) • Task 6.2- Participant Surveys (100)

The following sections describe the rationale for the selected impact evaluation approach, the proposed methodology for the study, and the project schedule and budget.

2. Rationale for Selected Impact Evaluation Methodology

In this section, we describe our rationale for the selection of the impact evaluation methodology. The NMR team recommends adopting a metering- and modeling-based analysis that uses post-installation electric billing data to calibrate the engineering savings. Participants' pre-installation fuel bills and consumption data will be incorporated into the calibration to the extent feasible. This analysis will include both long-term metering (to capture the full seasonal and off-season impacts) and spot metering (to measure the performance of units during winter periods and to assess the issue of loop sizing and ground temperature).

A metering-based engineering analysis allows for the direct measurement of GSHP operation and the creation of calibrated DOE 2 models that can be used to calculate demand and energy savings with a high level of rigor. This method would be consistent with Independent System Operator of New England Forward Capacity Market Monitoring and Verification (ISO-NE FCM M&V) Manual option D calibrated model approach.

The GSHP program has several characteristics that limit the feasibility of using a billing analysis to derive energy and environmental impacts, including the replacement of non-electric heating sources. These characteristics include the following:

- **The lack of representative pre-installation billing data.** Our understanding is that about three-quarters of participants are installing GSHP in place of non-electric heating systems, primarily oil furnaces or boilers. The electric billing data for these participants will not capture the pre-installation heating consumption levels. The difference between the pre- and post-installation periods will capture only the increase in electricity consumption due to the installation of GSHP (assuming weather normalization and control for other factors). The analysis could attempt to use a BTU-equivalent approach but this is fraught with issues due to the bulk delivery of oil (described in further detail below). Furthermore, converting fuel consumption data into BTU equivalents could potentially introduce another source of error.
- **Availability and accuracy of pre-installation fuel consumption data.** We understand that the Connecticut Energy Finance and Investment Authority (CEFIA) collects prior fuel usage data from participants. However, we must still account for the remaining oil in the tank at the beginning and the end of the heating season. In addition, oil-heated homes may be more likely to use wood stoves for supplemental heating, which would introduce another complicating factor in accurately measuring fuel consumption. Unlike consumption data for natural gas and electricity, for which usage is tied to specific months, with oil/propane/wood there is no way to disaggregate the seasonal consumption (no matter how accurately reported) across the heating season and one cannot tie the usage to weather patterns on a monthly basis.
- **Identification of a non-participant control group.** In addition to the issues surrounding the use of oil delivery records for participants, identifying and soliciting customers for a control group is also difficult. Unlike a control group for electric customers, in which billing data can be provided directly by their utility, the data would need to be obtained from customers who have no vested interest in the program and are likely to view this process as a burden. One way to lessen the burden would be to provide an incentive to customers who participate in the control group; however, even with an incentive it would be challenging to persuade customers to participate.

Overall we believe that, due to the error associated with estimating the pre-program fuel consumption, a billing analysis would result in savings projections with greater error than would result from the engineering approach we recommend. The following paragraphs summarize the key aspects of our recommended approach.

Spot metering would be conducted at 40 homes and would consist of the following components:

- Collection of household characteristics so that Manual J calculation can be completed and a DOE 2 prototype model can be constructed.
- Duct blaster and blower door tests to measure the current level of duct leakage and air infiltration in order to inform the DOE 2 model and confirm compliance with program shell requirements.
- Spot power and temperature measurements of the GSHP equipment and entering and leaving water temperature during mid-winter cold days that will be used as inputs to the DOE 2 model.

A particular focus would be the adequacy of the condenser loop during cold mid-winter days by measuring the temperature of the return condenser water. After assessing the mid-winter operation of the 40 GSHP installations, a sub-set of the sites (10) will be randomly selected for extended metering. The purpose of the long term metering is to capture the diversity of the operation of the GSHP unit during the heating and cooling seasons by measuring the interval power usage of the GSHP and auxiliary systems as a function of the day of week, hour of day and external temperature. The operation of residential heating and cooling equipment is more dynamic than commercial and industrial equipment due to interaction with the building occupants and by monitoring the electrical consumption and space temperatures we will be able to more accurately define operating parameters. Additional benefits would be the ability to install metering on water heating end use either through direct measurement of heating (electric resistance elements) or the use of proxy variables (circulation pumps) to define actual water heating usage. These data can then be utilized to calculate the savings attributable to use of GSHP de-superheating to provide hot water. The long-term metering period will last for about six to seven months so that operation of the GSHP will be monitored for a winter, spring and summer season.

In addition, the spot measurement data and the results of the Manual J calculations will be used to identify the installations where system sizing and field recovery are a potential issue. We will select up to ten of these systems for follow up on-site visits to conduct spot measurements in order to assess the field recovery and efficiency performance of the unit. These visits will occur in late summer or early fall of 2012.

Once the DOE 2 prototype models have been developed from the metering data and calibrated using the customer post-installation billing data, we will have established the heating and cooling loads for the participants. At this point we will have a reliable model that can be used to simulate the baseline conditions from information collected from the participant surveys and program data base such as fuel type of previous heating system, occupancy patterns, size of household, etc.

3. Methodology

3.1 Task 1: On-Site Sampling and Recruitment

This section describes our approach for developing an appropriate research sample of program participants for the on-site visits. We propose to employ Model-Based Statistical Sampling (MBSS) techniques to develop samples that are efficient, accurate and reliable.

Customers receive Energy Efficiency Fund rebates for installing GSHP through either the Residential New Construction Program or the Home Energy Solutions (HES) Umbrella Program. Additional rebates are provided by CEFIA and through Federal sources. Based on information provided by Connecticut Energy Efficiency Board (CEEB) in November of 2011, there are approximately 400 residential GSHP projects in the Connecticut Light & Power (CL&P) and United Illuminating (UI) territories. Of these roughly 400 residential projects, about 260 have been completed, with about one-half being retrofit projects and one-half being new construction. Therefore, we plan to include both retrofit and new construction projects in the sample with a similar proportion to their distribution in the population.

We plan to conduct the initial round of spot metering visits among 40 participants. The sample will be drawn to reflect both the mix of different size GSHP systems as well as the types of backup heating systems. We will review the sample and attempt to achieve coverage across GSHP manufacturers as well. In addition, ten participants in the sample will be randomly selected for long-term metering. After the initial on-site visit, up to ten additional sites will be selected for a follow-up visit for conducting spot measurements to assess field recovery performance.

To recruit for the on-site work, we will employ protocols that will most appropriately and efficiently recruit customers. Our proven residential recruiting protocols help ensure high response rates and minimal customer intrusion. These protocols include the screening of multiple contacts, the use of confirmation calls the day before the appointment, and the use of experienced recruiters who follow the principles below:

- A pleasant, respectful, and assured tone of voice.
- Use of the person's name.
- Identifying their specific utility as the Sponsor of the study.
- Stressing the importance of the study and assuring that this is not a sales call.

- For reluctant customers, reassurance on the importance of the visit. Allowing customers the opportunity to verify the study with their utility.
- Reminding the customer of the benefits they received through the program.
- Flexibility in scheduling, specifically, we will be available to perform visits early in the morning, in the evening hours, and on Saturdays.
- Conducting all scheduled callbacks.

In addition, each participant will be offered a $100 incentive for the initial site visit in order to encourage cooperation. An additional $50 incentive will be offered to participants selected for the long-term metering or follow-up visits.

3.2 Task 2: On-site Metering

3.2.1 Subtask 2.1: Spot Metering

Spot metering would be conducted at 40 homes and would consist of the following components:

- Collect nameplate equipment and operating characteristic data. The sources for these data may include the program inspection forms and data collected during the on-site visits. These data will be used to develop the DOE 2 savings model and the Manual J calculations to verify adequate sizing of the system and condenser loop.
- Duct blaster and blower door tests to measure the current level of duct leakage and air infiltration to inform the DOE 2 model that will be used to estimate demand and energy savings and confirm compliance with building shell requirements of the program.
- Spot power and temperature measurements of the GSHP equipment and entering and leaving water temperature during cold mid-winter days.
- Collection of household characteristics (including insulation levels) so that a Manual J calculation can be completed and a DOE 2 prototype model can be constructed.

We will provide a detailed summary identifying the number of units inspected, results of each test, and an assessment of the quality of the installation. Appendix A describes the on-site spot measurements in greater detail.

3.2.2 Subtask 2.2: Long-term Metering

Ten of the 40 sites will be randomly selected for long-term metering. The objective of the long-term metering will be to measure the performance of the GSHP in both the cooling and heating seasons. The data will be used to determine seasonal performance factors (effectively field-measured SEER and HSPF ratings) and will be inputs into the DOE 2 models that will estimate weather-normalized summer and winter savings, winter and summer savings load shapes, and peak demand savings.

Long-term metering for the ten sites will start in February to March and will extend into late summer/ early fall 2012, which should capture all of the operating parameters for a typical year. Appendix B contains a list of the metering points that will be monitored in this task.

3.2.3 Subtask 2.3: Follow-up Spot Metering

The spot measurements taken during the initial on-site visit (Subtask 2.1) and the results of the Manual J calculation (Task 3) will be used to identify participants whose condensing loops may have been undersized and therefore may not allow for adequate temperature recovery of the loop field. The NMR team will conduct an additional on-site visit at up to ten of these participants' homes in order to perform spot measurements of the loop sizing and ground temperature. To allow sufficient time for temperature recovery, the visits will be conducted in late summer of 2012.

3.3 Task 3: Assessment of System and Condenser Loop Sizing

Using data collected during the testing at the 40 spot metering visits (including subtask 2.3), the NMR team will perform a Manual J calculation to assess the process for sizing the GSHP systems and whether the units and condenser loops are sized properly. The home shell characteristics will be used to perform a Manual J calculation that will be compared to the assumptions used by the HVAC contractor to size the GSHP system. Additionally, the temperature of the water entering the system will also be used to assess the condenser loop sizing. Comparison of these two data sources will enable us to determine the following:

- Whether the Manual J calculations are being performed correctly
- Whether the Manual J calculations are being used to size the units, and
- Whether the Manual J calculations indicate that the condenser loop is adequately sized for winter operation based on observed entering water temperature.

The results of the Manual J calculations will be used to identify participants where the system and loop sizing may be incorrect. The field temperature data and spot measurements from the follow-up visits will be used to determine the extent of the inadequate sizing and field temperature recovery.

3.4 Task 4: DOE 2 Prototype Model Development

The savings analysis will be performed using a DOE 2 model that is consistent with the ISO-NE option D calibrated model approach. We will utilize the on-site data collected from the 40 sites to construct four prototype models based on the type of program participants and the baseline heating system types. We expect the four prototypes will include the following:

- Retrofit projects—electric and non-electric
- New Construction projects—electric and non-electric

We anticipate that the average housing characteristics will differ sufficiently between the retrofit and new construction homes to warrant the creation of separate DOE 2 prototype models for each group. Housing characteristics such as size, insulation and air leakage tend to vary significantly between the two groups, with new construction homes typically being larger, better insulated and tighter than retrofit homes. In addition, the baseline heating equipment assumptions may differ as well, which further warrants the development of distinct prototypes.

The primary reason for defining the prototype models in terms of electric and non-electric heating is two-fold; first, the housing characteristics for electric heated homes tend to be different than non-electric heated homes. Electric heated homes are typically smaller in size because it is more cost effective to install non-electric heating systems in larger homes. The second reason for the split is that from a model calibration standpoint the electrical usage patterns for all non-electrically heated homes are similar in the winter and distinctly different from electric heated homes. The specification of the non-electric prototype will be based on the heating system data collected during the on-site visits.

The prototype models will be calibrated using monthly post-installation electric billing data along with the interval whole premise load. The GSHP metered data will be used to calibrate the GSHP end-use model output using weather data to ensure that the heating and cooling loads of the homes are accurate.

3.5 Task 5: Savings Analysis

3.5.1 Subtask 5.1: Energy and Demand Savings Analysis

Once the DOE 2 prototype models have been calibrated, the baseline heating and cooling systems can be simulated in the model and savings impacts can be assessed. The models can be adjusted to reflect different fuel types and systems used for the baseline and/or backup heating, as well as building shell characteristics. The baseline scenarios will be developed from the participant surveys (see Task 6).

Using the individual load models based on the metered data, site-level savings will be determined independently for cooling and heating operation. These cooling and heating savings calculations will provide estimates of gross annual savings and hourly savings load shapes for the metered units and will be the basis for determining the peak demand load reductions. They will also be used to generate seasonal performance factors (SEER and HSPF) from the weather-normalized load shapes.

To evaluate compliance with the Verification of Installed Performance (VIP) protocol, the auditors will perform short term measurements to determine the capacity and efficiency of the GSHP in heating mode using procedures described in the VIP spreadsheet. Additionally the auditors will assess the air infiltration and duct leakage of the homes using blower door and duct blaster tests; these data, along with insulation data, will be used to evaluate the compliance with building shell requirements.

Finally, the savings attributable to water heating system change out will be assessed using primary data collected as part of the long term metering effort to establish hot water usage as a function of the number of building occupants and data collected on-site. The savings will be calculated using engineering models in a spreadsheet.

3.5.2 Subtask 5.2: Environmental Impact Analysis

The results of the energy and demand saving analysis will serve as the basis for calculating the environmental impacts. The steps will for the environmental analysis include the following:

- Derive net reduction in energy consumption for replaced or supplemental heating sources. Participants' pre-installation fuel bills and characteristics of the replaced or back-up heating system (e.g., fuel type, efficiency levels, etc.) will be used to quantify pre-installation consumption levels.

- Obtain GHG emission factor for CO_2 and NOx by fuel type (e.g., electricity, wood, oil, natural gas, propane)
- Calculate GHG impacts for CO_2 and NOx by fuel source (reduction in consumption x GHG emission factor)
- Calculate net GHG impacts for CO_2 and NOx (sum across fuel types for CO_2 and for NOx).

3.6 Task 6: Market Assessment

A key objective of the study is to provide the sponsors with clear understanding and insight into the future opportunities for GSHPs in Connecticut. The information collected in the study will help the sponsors determine if the promotion of GSHP can be done in a way that minimizes free riders and yields energy, peak demand and environmental savings in a cost effective manner. We propose to conduct a participant telephone survey as well as in-depth interviews with participating contractors.

3.6.1 Subtask 6.1: Participant Telephone Survey

The primary objective of the participant telephone survey is to understand the following:

- Motivations for installing GSHP
- Level of importance that customers assign to cost, payback, environmental and other motivators
- Value of program incentives (Connecticut Energy Efficiency Fund [CEEF] and CEFIA) separate from federal incentives

3.6.1.1 Sample design

Given the population of approximately 400 program participants, we recommend conducting telephone interviews with 100 participants. This sample size should be sufficient to provide overall results with 90% confidence and +/-7.2% accuracy, assuming a worst-case scenario. In addition, we will attempt to interview as many as possible of the 40 participants who receive on-site visits.

3.6.1.2 Survey Design

We anticipate that the participant telephone survey will ask questions regarding the following topics:

- Type and fuel of equipment considered as alternative to GSHP
    - What would participants have done in the absence of the program?
    - Would they have installed GSHP or another system?
    - Did the incentives affect the timing of their decision?
- Reasons for purchase of GSHP
    - Lower bills, increase efficiency, comfort, environmental, etc.
- Reasons for participation
    - Incentive, VIP services
- Concerns about and obstacles to installing GSHP
    - Space requirements, cost, uncertainty of payback/savings, inconvenience, etc.
- Sources for financial incentives
    - CEEF, CEFIA, federal government, etc.
- Influence of program and incentives on decision to participate (free ridership)
    - Separately for CEEF & CEFIA
- Satisfaction with GSHP system
    - Perceived efficiency level, performance, and comfort
- Satisfaction with GSHP program
- Level of concern about energy bills
- Demographic characteristics
    - Home size, household size, etc.
    - Income level, education level, age, etc.

3.6.2 Subtask 6.2: Participating Contractor Interviews

We anticipate conducting ten in-depth telephone interviews with installation contractors who participate in the GSHP program. We understand that about 40 to 50 contractors have participated in the program, and will attempt to target the contractors who are more active. The objective of these interviews is to garner program feedback, and to help understand the baseline conditions, the effect of program incentives, and reasons for not installing GSHP. We anticipate that the interviews will include questions on the following topics:

- Experience and level of satisfaction with GSHP program
    - What works well about the GSHP program, and what could be improved?
- VIP requirements
    - Are the requirements onerous?
    - Would they perform these steps if not required?
    - How effective are the VIP requirements?
- Reasons why customers decide not to install GSHP (besides cost)
- Differences between new construction and retrofit applications
- Estimates of equipment and installation costs
- Estimate of potential market size for GSHP installations
    - Number of GSHPs installed outside program
- Perspective on future trends in GSHP market

Because of the small number of interviews, we expect the analysis to be qualitative in nature.

4. Deliverables

The deliverables for the GSHP study include the following:

- Impact Evaluation
  - Draft and final sampling plan for on-site activities
  - Draft and final on-site data collection forms
- Participant Survey
  - Draft and final participant survey
  - Interim report of results
- Contractor Interviews
  - Draft and final contractor interview guide
  - Interim report of results
- Draft and final overall report
- Presentation of final results

5. Data Request

The NMR Team will require an updated extract of the GSHP participant tracking database. We will provide a formal data request after the scope of work has been approved.

6. Project Schedule

We envision the schedule for this project progressing as shown in Table 2 below.

Table 2: Schedule

Task	2012				2013
	Q1	Q2	Q3	Q4	Q1
Draft work plan	◊				
Final work plan	◊				
Project Approval	◊				
Task 1: Sampling & recruitment	◊				
Task 2.1: Short-term on-site metering	◊				
Task 2.2: Long-term on-site metering	◊	◊	◊		
Task 2.3: Followup spot metering			◊		
Task 3: Assessment of system & condenser loop sizing			◊		
Task 4: DOE2 prototype model development			◊	◊	
Task 5.1: Energy & demand savings analysis				◊	
Task 5.2: Environmental savings analysis				◊	
Task 6.1: Participant surveys	◊	◊			
Task 6.2: Contractor interviews	◊	◊			
Draft overall report				◊	
Final overall report					◊

7. Project Budget

We estimate that this project will cost $337,885 (Table 3).

Table 3: Budget

				On-site Data Collection					Market Assessment		Impact Analysis						
LABOR	2011 Hourly Rate	2012 Hourly Rate	Kickoff/ DWP	On-site Metering Sample Design	Data Request and processing	Data collection Instruments	Recruitment	Data Collection	Participant Surveys	Contractor Interviews	Impact Analysis	Draft Report	Final Report	Presentation	Mgt/Communication	TOTAL HOURS	LABOR COSTS
Senior Principal Consultant	$220	$231	8	16	8	40		24	4	4	16	60	16	16	56	268	$61,820
President - NMR	$213	$224							6	3		4				13	$2,912
Senior Project Manager - NMR	$187	$196	8	2	2	2		2	64	41	4	60	16	8	20	229	$44,812
Principal Analyst II - KEMA	$154	$162		8		8					180	40	8			244	$39,455
Senior Analyst II - KEMA	$143	$150	8	40	40	24								16	32	160	$23,967
Analyst II-KEMA	$118	$124			40			780					24			844	$104,572
Research Associate - NMR	$107	$112							116	84						200	$22,470
Sr. Researcher II - KEMA	$107	$112				8						16	16			40	$4,494
Sr. Researcher I - KEMA	$94	$99				8										8	$790
Researcher II - KEMA	$83	$87				8	50									58	$5,055
Administrative	$70	$74										12	4			16	$1,176
Total Labor By Task			$4,400	$11,388	$13,202	$16,915	$4,358	$102,578	$27,845	$19,069	$33,586	$35,664	$13,191	$7,666	$21,661	2080	$311,522
OTHER DIRECT COSTS	Price per Unit		Units By Task													TOTAL UNITS	TOTAL ODCs
Data Collection Trips: Airfare/Hotel/Car Rental/Food	$169							60								60	$10,114
Metering Leasing per site	$100							60								60	$6,000
Incentive per site (1)	$100/$150							60								60	$5,000
Participant survey costs									5250								$5,250
Total ODCs By Task			$0	$0	$0	$0	$0	$21,114	$5,250	$0	$0	$0	$0	$0	$0	180	$26,364
TOTAL LABOR & OTHER DIRECT COSTS			$4,400	$11,388	$13,202	$16,915	$4,358	$123,692	$33,095	$19,069	$33,586	$35,664	$13,191	$7,666	$21,661		$337,885

(1) All participants will receive $100 incentive for the first visit. The 20 participants who have a second visit will receive an additional $50 incentive for a total cost of $5000.

Appendix A: Spot Metering Activities

The auditors will perform short term measurements to determine the capacity and efficiency of the GSHP in heating mode using procedures described in the VIP spreadsheet.[1] The auditors will measure the following:

- Air temperature at air handler (In)
- Air temperature at air handler (Out)
- Water temperature (In)
- Water temperature (Out)
- Supply air flow using “True Flow” meter
- Power consumption of Heat Pump Unit
- Power consumption of Pump
- Power consumption of Fan

These measurements will be taken with any strip heat off over a 20-30 minute period so that the system can stabilize and heating capacity and efficiency will be calculated. The auditors will also check the controls for strip heating to make sure it is enabled at the correct heating stage and check for the presence of a desuperheater. These procedures will be performed because they are part of the VIP testing procedures used for the program.

[1] It is assumed that all sites will have Pressure/Temperature ports already installed at the time of the on-site since pressure and temperature measurements are required to complete the VIP Spreadsheet.

Appendix B: Long-term Metering Activities

The following list provides the metering points for the long-term metering task:

- Whole premise interval power
- Heat pump condenser unit interval power
- Heat pump water pump interval power
- Heat pump fan interval power
- Strip heat spot power and event logger (if present)
- Water heater spot power and event logger
- Indoor temperature

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CLEAN ENERGY
FINANCE AND INVESTMENT AUTHORITY

Memo

To: Board of Directors

From: Deployment Committee, Bryan Garcia and Dale Hedman

Date: May 11, 2012

Re: Proposal to Modify Incentive and Increase Funding for Step 2 of the Residential Solar Investment Program

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Based on feedback with the solar industry, we propose to modify Step 2 of the Residential Solar Investment Program in two ways:

1. **Race to the Solar Rooftop** – separate the two competing business models (i.e. rebate and PBI) so as to have the firms participating within each model aimed for fixed volumes of installations (i.e. MW) by a certain date (i.e. April 1, 2013), whichever is reached first, will define the end of the step.

2. **Extend the Runway** – we would like to extend the subsidies for about one year in order to bring more firms into the marketplace. We have done well so far, but not well enough in attracting the level of business participation we would like to see in the market.

In June of this year we intend to begin discussions with all of the firms about introducing a loan (e.g. lease) product to begin to transition the market from incentives to financing that would begin in Step 3.

BACKGROUND

On March 2, 2012, CEFIA launched the residential solar investment program (the Program). The Program offers rebates and performance-based incentives (PBI) to support homeowners install solar photovoltaic systems. Through two months of the Program, CEFIA has approved 208 projects that will lead to the installation of 1,400 kW of clean energy (see Table 1). Projects underneath the Program have thus far sought approximately $2.5 million in incentives leveraged by an additional $4.9 million of private investment – a leverage ratio of 1:2, an improvement above the CCEF's historical performance of 1:1; meaning more installations and jobs per ratepayer incentives provided.

Table 1. Program Data as of May 8, 2012

	Rebate	PBI	Total
# Projects Approved	190	18	208
Total Installed Cost	$6,660,020	$696,133	$7,356,153
Installed Capacity (kW)	1,247	145	1,392
Installed Cost per kW	$5,341	$4,801	$5,285
Total Incentive Amount	$2,206,113	$261,757	$2,467,870
Incentive/kW	$1,769	$1,802	$1,773

The data indicates the following:

- **Customer Acquisition** – strong demand from households interested in installing solar PV systems, nearly 25 households per week or 5 per business day.

- **Strong Performance** – staff had estimated that 204 systems totaling 1,261 kW of capacity would be supported through incentives provided in Step 1. To date, there are 208 systems seeking incentives totaling 1,392 kW of capacity – 2 percent and 10 percent greater, respectively, than expected, with nearly $35,000 in incentives still available in Step 1.

- **Lower Average Incentive Level** – the average incentive level per kW installed is about $1,775 – as opposed to the rebate amount of $2,450, nearly 30% less. This is due primarily to the average size installations being greater than 5 kW (e.g. 6.7 kW); the incremental incentive above 5 kW receives a lower rebate ($1,250 per kW versus $2,450 per kW).

- **Limited PBI Participation** – less than 10 percent of the projects have been supported through PBI incentives, well below the expected participation for third-party financiers. In contrast, over 90 percent of the projects have been supported through rebates, well above the expected participation for local installers.

- **Lower Installed Cost for Third-Party Financiers** – even though there is limited participation from third-party financiers in the program thus far, their installed costs are 10 percent less than installers using the rebate program. Those installers using the PBI appear to provide systems at a much lower cost than those using the rebate.

For more information – see the attached Market Watch Report (as of May 8, 2012)

PROPOSAL

CEFIA's goal is to create a robust market for residential solar PV systems in Connecticut that:

- Maximizes the installation of systems and generation of clean energy per dollar of ratepayer incentive;

- Supports local installers in building a business and becoming more competitive in the market;
- Builds a base of third party financing companies to help serve the low and middle income markets, which lease products do; and
- Transitions the market over time to a financing model instead of a subsidy-driven model.

With these goals in mind, we propose revising the Step 2 incentives (see Table 2)

Table 2. Proposed Revision to Step 2 Incentives

	Rebate		PBI
	≤5 kW	10 kW ≥ x x > 5 kW	10 kW ≥ x
Current Step 1	\$2.400/W	\$1.250/W	\$0.300/kWh
Current Step 2	\$2.100/W	\$0.900/W	\$0.243/kWh
Proposed Step 2	\$2.275/W	\$1.075/W	\$0.300/kWh

We also propose establishing the following goals for Step 2:

- **Rebate Incentive** – a rebate will be provided in the amount of \$2.275/W for systems up to 5 kW and an additional \$1.075/W for systems 5-10kW until collectively installed 2.8 MW or by April 1, 2013, whichever comes first.
- **Performance Based Incentive** – Performance based incentive in the amount of \$0.300/kWh for systems up to 10 kW until collectively installed 2.8 MW or by April 1, 2013, whichever comes first.

As installers and third party financiers approach either the date or the installed capacity volume, CEFIA will solicit their views about the next step. In June of 2012, CEFIA will begin discussions about adding a loan component to Step 3 for the rebate to support local installers.

We believe that with these program revisions, the Program will be improved to attract more third-party financiers into the Connecticut market to use the PBI and the local installers will continue to grow their business while competing against each other to improve costs to consumers.

RESOLUTION

WHEREAS, Section 106 of Public Act 11-80 “An Act Concerning the Establishment of the Department of Energy and Environmental Protection and Planning for Connecticut’s Energy Future” (the Act) requires Clean Energy Finance and Investment Authority (CEFIA) to design and implement a Residential Solar Photovoltaic Investment Program (Program Plan) that results in a minimum of thirty (30) megawatts of new residential PV installation in Connecticut before December 31, 2022.

WHEREAS, pursuant to Section 106 of the Act, CEFIA has prepared a Program Plan and a declining incentive block schedule (“Schedule”) that offer directs financial incentives, in the form of performance-based incentives or expected performance-based buydowns, for the purchase or lease of qualifying residential solar photovoltaic systems.

WHEREAS, the Deployment Committee recommends to the CEFIA Board of Directors (the “Board”) to revise Step 2 of the Schedule to (1) address the findings from the program data obtained since approval of the original incentive schedule,(2) address changes in the solar market ascertained since approval of the original incentive schedule which would affect the expected return on investment for a typical residential solar photovoltaic system under the performance based incentive model by twenty percent or more, and (3) ensure that third party financing companies enter the market to help serve the low and middle income markets.

NOW, therefore be it:

RESOLVED, that the Board approves the revised Schedule of Incentives as recommended by the Deployment Committee.

RESOLVED, that the Board approves of a Step 2 budget increase of five million dollars to a total of ten million dollars.

RESOLVED, that this Board action is consistent with Section 106 of the Act.

CLEAN ENERGY
FINANCE AND INVESTMENT AUTHORITY

Market Watch Report

Residential Solar Investment Program

The Weekly Market Watch Report provides up-to-date information on how the Residential Solar Investment Program is performing. This program provides Connecticut residents with incentives to make smart investments and save money on their electric bills.

The Clean Energy Finance and Investment Authority now offers two different incentive models to help customers. The first model (Rebate) supports residential consumers who seek to purchase a solar PV system. The second model (PBI) is a third-party financing model designed to allow consumers access to solar PV systems with no or limited up-front costs.

Executive Summary

- To date, we have approved applications for 190 EPBBs (Rebates) and 18 PBIs;
- The average system size is 7 kW STC
- The total amount of approved incentives is $2,467,870;
- Of these approved applications, the average system cost is 5,285 / kW;
- The average incentive per kW STC is $1,773
- Step 1 is expected to be fully subscribed by May 11, 2012

Program Data as of 8-May-2012

	Rebate	PBI	Total	Average
# Projects	190	18	208	
Total Cost	$6,660,020	$696,133	$7,356,153	
Total kW STC	1,247	145	1,392	
Average Total Cost	$35,053	$38,674		$35,366
Total Incentive Amount	$2,206,113	$261,757	$2,467,870	
Incentive / kW STC	$1,769	$1,802		$1,773
ZREC Equivalent Incentive Price	$0.12	$0.11		
Funds Remaining (Step 1)	($956,113)	$988,243	$32,130	

Environmental Factors

Lifetime CO_2 Reduction	Lifetime NO_x Reduction	Lifetime SO_2 Reduction	Annual Cars off the Road	Equivalent Acres of Trees Planted
34,300,116 lbs.	15,546 lbs.	14,223 lbs.	114	229

Learn more at: www.ctcleanenergy.com/solarhome

About the Clean Energy Finance and Investment Authority

CEFIA was established by Connecticut's General Assembly on July 1, 2011 as a part of Public Act 11-80. This new quasi-public agency supersedes the former Connecticut Clean Energy Fund. CEFIA's mission is to help ensure Connecticut's energy security and community prosperity by realizing its environmental and economic opportunities through clean energy finance and investments. As the nation's first full-scale clean energy finance authority, CEFIA will leverage public and private funds to drive investment and scale-up clean energy deployment in Connecticut.

The Authority invests its resources in an array of enterprises, initiatives and projects aimed to:

- Attract and deploy capital to finance the clean energy goals of Connecticut
    - Help Connecticut become the most energy efficient state in the nation
    - Help scale-up the deployment of renewable energy in the state
    - Provide support for the infrastructure needed to lead the clean energy economy
- Develop and implement strategies that bring down the cost of clean energy in order to make it more accessible and affordable to consumers
- Reduce reliance on grants, rebate and other subsidies and move towards innovative low-cost financing of clean energy deployment

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Date	Article/ Article Link	Source	Press Perspective
2/7/12	Solar City Powers up in Connecticut Today	New Haven Register	positive
2/7/12	Solar City Expands to Connecticut	Business Wire	positive
2/10/12	Connecticut to Vote on New Residential Solar Program	Clean Techies	positive
2/13/12	Solar Installers Increasingly Liking Connecticut	The Hartford Business Journal	positive
2/19/12	Controversy Flares in New Solar Program for Homeowners	The CT Mirror	negative
2/19/12	Solar Businesses: Conn. Incentives too Short-Term	Stamford Advocate	negative
2/24/12	Connecticut Solar Installers Frustrated Over Legislation	CleanEnergyAuthority.com	negative
2/26/12	Solar Connecticut	Republican American	neutral
2/27/12	Solar Energy News – A Look Back to Last Week	CleanEnergyAuthority.com	negative
3/2/12	Final Approval on New Home Solar Program	The CT Mirror	neutral
3/2/12	CT Launches $40M Residential Solar Fund	The Hartford Business Journal	neutral
3/2/12	DEEP Chief Approves New Program to Promote Residential Solar Power	Republican American	neutral
3/12/12	CT Pushing for More Companies Like STR	Hartford Business Journal	neutral
4/9/12	CT OK's $1.4M to Make Solar System Installations More Affordable	TheStreet.com	positive
4/10/12	CT Program OK's 126 Home Solar Rooftop Systems	Boston.com	neutral
4/10/12	State Program OK's 126 Home Solar Rooftop Systems	The Hartford Courant	neutral
4/11/12	126 Applications so far for Residential Solar Systems	TheDay.com	positive
4/11/12	CT Approves 126 Home Solar Projects	The Hartford Business	positive

		Journal	
4/19/12	New Connecticut Solar Program Exceeds Expectations	CleanEnergyAuthority.com	positive

CLEAN ENERGY
FINANCE AND INVESTMENT AUTHORITY

Residential Solar Investment Program

NPV of Incentive Comparisons

Board of Directors Preparation Materials

May 18, 2012

Statute
P.A. 11-80 Section 106 (c)(5)

CLEAN ENERGY FINANCE AND INVESTMENT AUTHORITY

- …and (5) provide comparable economic incentives for the purchase or lease of qualifying residential solar photovoltaic systems.

Comparisons
NPV of Incentive Analysis (Step 1)

CLEAN ENERGY
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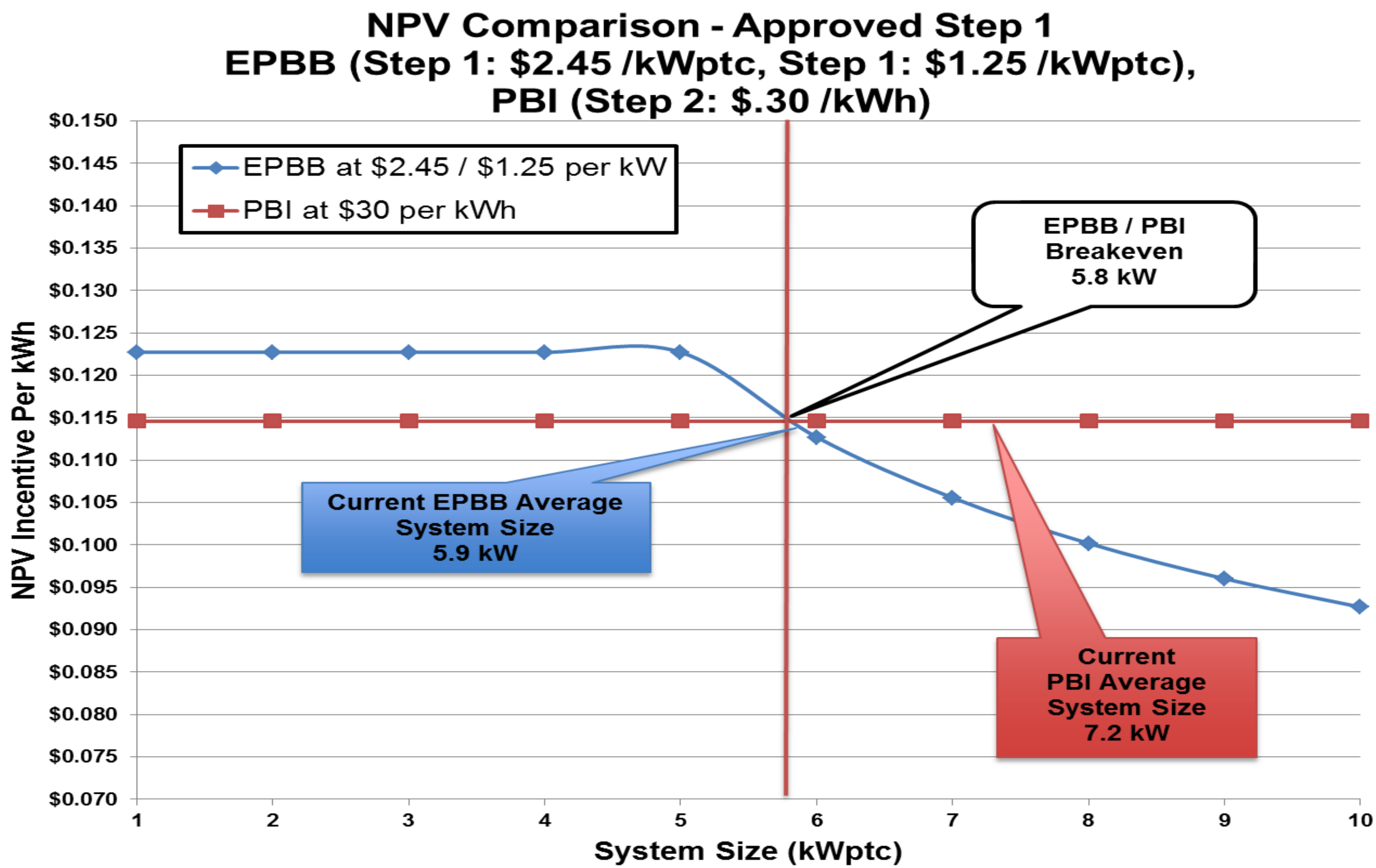
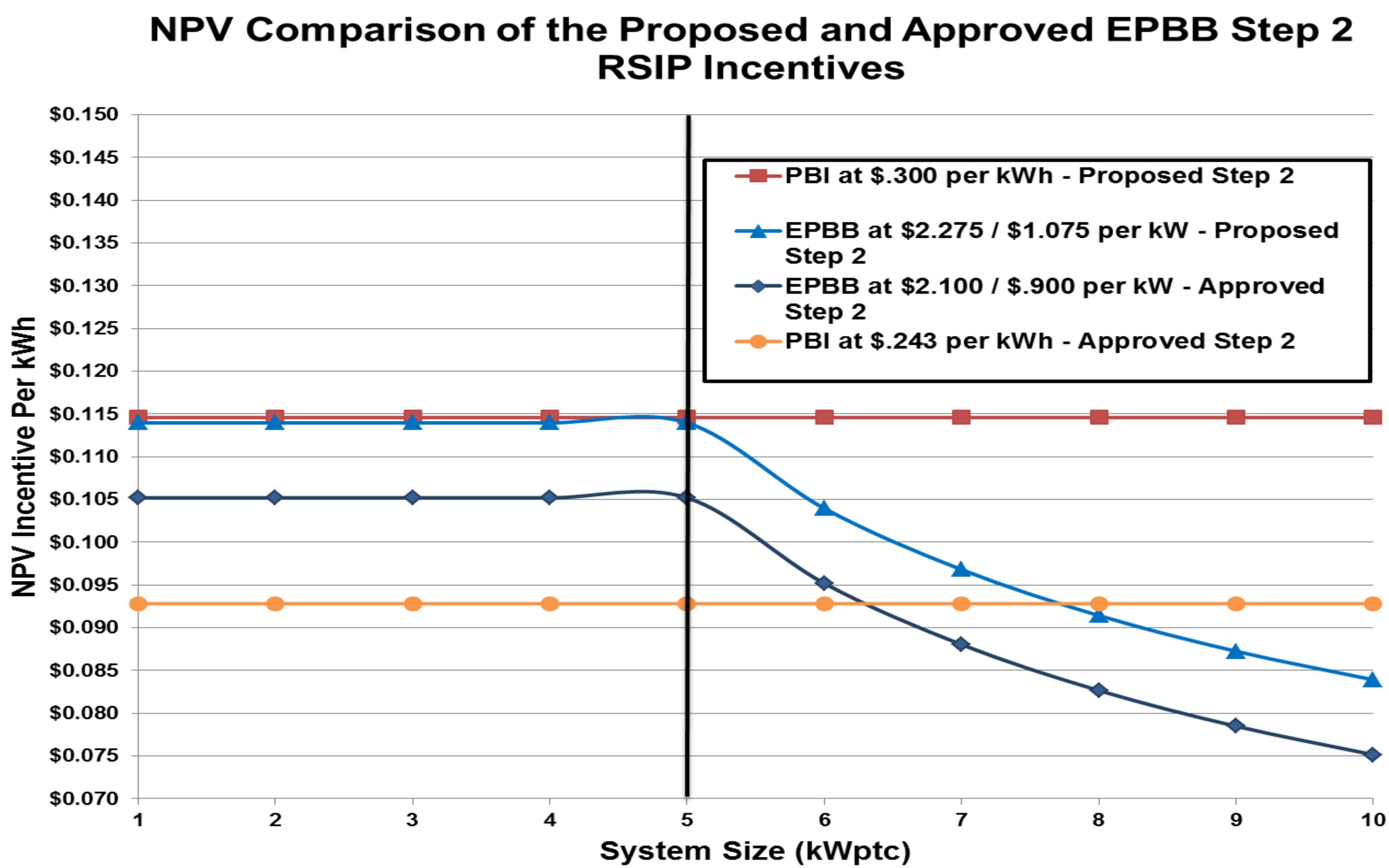


Comparisons

NPV of Incentive Analysis (Step 2 – Comparisons)



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CLEAN ENERGY FINANCE AND INVESTMENT AUTHORITY

ETHICAL CONDUCT POLICY

Ethical conduct is a core value of the Clean Energy Finance and Investment Authority ("CEFIA") and all employees and officials of CEFIA are expected to maintain the highest professional standards in the conduct of their duties. In particular, each person is responsible for, and should become familiar with, the Code of Ethics for Public Officials. A copy of the "Guide to the Code of Ethics for Public Officials" is found **here**. You may access the Code on the Office of State Ethics website by clicking **here.**

Principal provisions of the Code of Ethics for Public Officials include:

- **GIFTS -** In general, state employees are prohibited from accepting gifts from anyone doing business with, seeking to do business with, or directly regulated by the state employee's agency or department or from persons known to be a registered lobbyist or lobbyist's representative. (See statutory references below)
- **FINANCIAL BENEFIT -** A state employee is prohibited from using his/her office for the financial benefit of the individual, certain family members, or that of an associated business.
- **OUTSIDE EMPLOYMENT -** A state employee may not accept outside employment which will impair his/her independence of judgment as to official state duties or which would induce the disclosure of confidential information. Generally, outside employment is barred if the private employer can benefit from the state employee's official actions.
- **FINANCIAL DISCLOSURE -** Certain state employees are required to file a financial disclosure statement with the Office of State Ethics. This statement will be considered public information.
- **POST-STATE EMPLOYMENT -** State employees are required to comply with the Code of Ethics provisions pertaining to post-state employment, which are commonly known as "revolving door" prohibitions. For example, there are restrictions on accepting employment with a party to certain contracts if you were involved in the negotiation or award of the contract; for one year after leaving state service, you may not represent anyone for compensation before your former agency; certain designated individuals in the State's regulatory agencies may not, for one year after leaving state service, accept employment with any business subject to regulation by their former agency.

Employees leaving CEFIA are required to comply with the Code of Ethics provisions pertaining to post-employment. Employees should familiarize themselves with the statutes pertaining to post-employment. They can be found at C.G.S. Section 1-84a and 1-84b. You may access these statutes **here**. A summary of these requirements is included in the "Guide to the Code of Ethics for Public Officials and State Employees" found above.

Before an employee leaves the employment of CEFIA, an exit interview will be conducted by our Ethics Compliance Officer. The purpose of this exit interview will be to individually review potential issues relating to post-CEFIA employment.

Given the nature of CEFIA's role as a public body investing and promoting the investment in clean energy companies, CEFIA expects that, in addition to complying with all provisions of the Code of Ethics for Public officials, employees and officials will:

- Maintain the confidential information to which CEFIA has access;
- Avoid actual or potential conflicts of interest;
- Neither interfere with nor solicit contracts on behalf of any person;
- Avoid, in the case of employees, outside employment which may compromise or interfere with the ability to perform duties for CEFIA; and
- For those employees subject to the requirements of C.G.S. 1-83(a), submit the Statement of Financial Interests disclosure documents to the Office of State Ethics in a timely manner.

The rules of conduct in these matters may be covered in more detail in the CEFIA Employee Handbook.

The board of CEFIA continues to have well justified faith in the integrity of and ethical conduct of employees and officials of CEFIA. It is understood however, that breaches of this ethics policy may require disciplinary action, including but not limited to dismissal from CEFIA, in addition to sanctions provided by state law. Such sanctions are to be applied as appropriate with the approval of the CEFIA Board of Directors.

It is the responsibility of each employee and official to inquire of the CEFIA Ethics Compliance Officer or the Office of State Ethics at 860.566.4472 should any question arise concerning his or her conduct.

Statutory References

Sec. 1-79. Definitions. The following terms, when used in this part, shall have the following meanings unless the context otherwise requires:

(e) "Gift" means anything of value, which is directly and personally received, unless consideration of equal or greater value is given in return. "Gift" **shall not include**:

1) A political contribution otherwise reported as required by law or a donation or payment as described in section 9-601a;

(2) Services provided by persons volunteering their time, if provided to aid or promote the success or defeat of any political party, any candidate or candidates for public office or the position of convention delegate or town committee member or any referendum question;

(3) A commercially reasonable loan made on terms not more favorable than loans made in the ordinary course of business;

(4) A gift received from (A) an individual's spouse, fiancé or fiancée, (B) the parent, brother or sister of such spouse or such individual, or (C) the child of such individual or the spouse of such child;

(5) Goods or services (A) which are provided to the state (i) for use on state property, or (ii) to support an event or the participation by a public official or state employee at an event, and (B) which facilitate state action or functions. As used in this subdivision, "state property" means (i) property owned by the state, or (ii) property leased to an agency in the Executive or Judicial Department of the state;

(6) A certificate, plaque or other ceremonial award costing less than one hundred dollars;

(7) A rebate, discount or promotional item available to the general public;

(8) Printed or recorded informational material germane to state action or functions;

(9) Food or beverage or both, costing less than fifty dollars in the aggregate per recipient in a calendar year, and consumed on an occasion or occasions at which the person paying, directly or indirectly, for the food or beverage, or his representative, is in attendance;

(10) Food or beverage or both, costing less than fifty dollars per person and consumed at a publicly noticed legislative reception to which all members of the General Assembly are invited and which is hosted not more than once in any calendar year by a lobbyist or business organization. For the purposes of such limit, (A) a reception hosted by a lobbyist who is an individual shall be deemed to have also been hosted by the business organization which he owns or is employed by, and (B) a reception hosted by a business organization shall be deemed to have also been hosted by all owners and employees of the business organization who are lobbyists. In making the calculation for the purposes of such fifty-dollar limit, the donor shall divide the amount spent on food and beverage by the number of persons whom the donor reasonably expects to attend the reception;

(11) Food or beverage or both, costing less than fifty dollars per person and consumed at a publicly noticed reception to which all members of the General Assembly from a region of the state are invited and which is hosted not more than once in any calendar year by a lobbyist or business organization. For the purposes of such limit, (A) a reception hosted by a lobbyist who

is an individual shall be deemed to have also been hosted by the business organization which he owns or is employed by, and (B) a reception hosted by a business organization shall be deemed to have also been hosted by all owners and employees of the business organization who are lobbyists. In making the calculation for the purposes of such fifty-dollar limit, the donor shall divide the amount spent on food and beverage by the number of persons whom the donor reasonably expects to attend the reception. As used in this subdivision, "region of the state" means the established geographic service area of the organization hosting the reception;

(12) A gift, including but not limited to, food or beverage or both, provided by an individual for the celebration of a major life event;

(13) Gifts costing less than one hundred dollars in the aggregate or food or beverage provided at a hospitality suite at a meeting or conference of an interstate legislative association, by a person who is not a registrant or is not doing business with the state of Connecticut;

(14) Admission to a charitable or civic event, including food and beverage provided at such event, but excluding lodging or travel expenses, at which a public official or state employee participates in his official capacity, provided such admission is provided by the primary sponsoring entity;

(15) Anything of value provided by an employer of (A) a public official, (B) a state employee, or (C) a spouse of a public official or state employee, to such official, employee or spouse, provided such benefits are customarily and ordinarily provided to others in similar circumstances; or

(16) Anything having a value of not more than ten dollars, provided the aggregate value of all things provided by a donor to a recipient under this subdivision in any calendar year shall not exceed fifty dollars.

(17) Training that is provided by a vendor for a product purchased by a state or quasi-public agency which is offered to all customers of such vendor; or

(18) Travel expenses, lodging, food, beverage and other benefits customarily provided by a prospective employer, when provided to a student at a public institution of higher education whose employment is derived from such student's status as a student at such institution, in connection with bona fide employment discussions.

Section 1-84 Prohibited Activities

(m) No public official or state employee shall knowingly accept, directly or indirectly, any gift, as defined in subsection (e) of section 1-79, from any person the official or employee knows or has reason to know: (1) Is doing business with or seeking to do business with the department or agency in which the official or employee is employed; (2) is engaged in activities which are directly regulated by such department or agency; or (3) is prequalified under section 4a-100. No person shall knowingly give, directly or indirectly, any gift or gifts in violation of this provision. For the purposes of this subsection, the exclusion to the term "gift" in subdivision (12) of subsection (e) of section 1-79 for a gift for the celebration of a major life event shall not apply.

Any person prohibited from making a gift under this subsection shall report to the Office of State Ethics any solicitation of a gift from such person by a state employee or public official.

CLEAN ENERGY FINANCE AND INVESTMENT AUTHORITY
ETHICS STATEMENT

The Clean Energy Finance and Investment Authority ("CEFIA") was created in 2011 by the State legislature as a quasi-public agency of the State of Connecticut. Its purpose is to ensure Connecticut's security and prosperity by realizing its energy, environmental and economic opportunities through clean energy finance and investments.

Ethical conduct is a core value of CEFIA and all employees and officials of CEFIA are expected to maintain the highest professional standards in the conduct of their duties as prescribed by the Code of Ethics for Public Officials and State Employees (see CGS §§ 1-79 through 1-89) found here. CEFIA maintains both a Board of Directors Ethical Conduct Policy and a staff Ethical Conduct Policy. Both policies may be found on the CEFIA web site found here.

CEFIA is committed to maintaining the highest standards in the conduct of their duties in order to maintain public trust and confidence, and to establishing the highest standards of honesty, integrity and quality of performance by recognizing the need for compliance with all relevant statutes, executive orders, rules and regulations.

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BOARD OF DIRECTORS AND ADVISORY COMMITTEE MEMBERS ETHICAL CONDUCT POLICY

Section 1. Purpose

Ethical conduct and transparency in the conduct of its business are core values of the Clean Energy Finance and Investment Authority ("CEFIA"). The directors of CEFIA are expected to maintain the highest standards in the conduct of their duties to maintain public trust and confidence in CEFIA. It is the purpose of this Ethics Policy to establish the highest standards of honesty, integrity and quality of performance for all CEFIA directors, recognizing the need for compliance with all relevant statutes, executive orders, rules and regulations to avoid even the appearance of impropriety in the performance of CEFIA's statutory mandate.

In particular, each director is responsible for his or her conduct, and should become familiar with, the Code of Ethics for Public Officials. A copy of the 2011 *Guide to the Code of Ethics for Public Officials and State Employees* may be found by clicking **here**.

This Ethics Policy is intended to be a general guide for CEFIA directors in determining what conduct is prohibited so that it may be avoided.

Section 2. Values

In performance of their duties, CEFIA directors shall:

- Maintain ethical standards beyond strict compliance with relevant statutes and regulations;
- Fulfill the statutory mandate of CEFIA in fostering the growth, development and commercialization of clean energy sources and related enterprises and in stimulating demand for clean energy and in the deployment of clean energy resources which serve end use customers in the State of Connecticut;
- Make all decisions strictly on a public purpose and financial basis, without regard to political affiliation or personal interest;
- Fulfill their obligation to applicants, the public, ratepayers, the Executive Branch of the State of Connecticut, the Connecticut General Assembly

and all other stakeholders in CEFIA;

- Maintain transparency and honesty in all operations of CEFIA;
- Act as a responsible stewardship of all CEFIA assets;
- Provide for the timely distribution of all public information to any interested party; and
- Maintain the public trust by strict adherence to the public purpose for which CEFIA was created.

Section 3. Applicability

This Ethics Policy is applicable to all directors of CEFIA and, to the extent required by law, all non-director voting members of any advisory committees formed by CEFIA.

Section 4. Enforcement

Any questions or concerns regarding violations or suspected violations of either the Code of Ethics for Public Officials or this Ethics Policy shall be brought to the attention of the Chairperson or Vice-Chairperson of the Board of Directors in writing who shall then transmit such questions or concerns to the Board of Directors. Persons subject to this Ethics Policy may also seek advice from the Office of State Ethics at 860-566-4472 regarding known or suspected violations of the Code of Ethics. Further, persons subject to this Ethics Policy may seek advice from the Office of State Ethics should any questions arise concerning his or her conduct.

Intentional violations of either the Code of Ethics for Public Officials or this Ethics Policy will not be tolerated and will be reported to the Board and the Office of State Ethics and, if applicable, to the appropriate federal and state agencies.

Section 5. Code of Ethics Compliance

As public officials of the State of Connecticut, CEFIA directors are subject to all relevant ethics statutes, regulations, and the like of the State of Connecticut. Key provisions of the Code of Ethics for Public Officials include:

- **GIFTS –** In general, public officials are prohibited from accepting gifts from anyone doing business with, seeking to do business with, or directly regulated by the official's agency or department or from persons known to be a registered lobbyist or lobbyist's representative. There are also restrictions on gifts between public officials in certain circumstances. (See the *Guide to the Code of Ethics for Public Officials and State Employees*, and Selected Statutory References, Sections 1-79(e) and 1-84(m) found by clicking **here**.)

- **FINANCIAL BENEFIT –** A public official is prohibited from using his/her office or non-public information obtained in state service for the financial benefit of the individual, certain family members, or that of an associated business. (See Selected Statutory References, Section 1-84(c))

- **FINANCIAL DISCLOSURE –** All CEFIA directors are required to file a financial disclosure statement with the Office of State Ethics. Some or all of the information contained in the financial disclosure statement may be considered public information. (See the *Guide to the Code of Ethics for Public Officials and State Employees* and Selected Statutory References, Sections 1-79(e) and 1-84(m))

- **RECUSAL OR REPORTING IN CASE OF POTENTIAL CONFLICTS –** The Code of Ethics requires that public officials avoid potential conflicts of interest. If a director would be required to take official action that would affect a financial interest of such director, certain family members or a business with which they are associated, they must excuse themselves from participating in deliberations, voting or otherwise taking affirmative action on the matter. (See Selected Statutory References, Section 1-86(a) and CEFIA's Bylaws, Article VII, found by clicking **here**). Additionally CEFIA has prepared a written Ethics Statement (as noted in sec. 1-86 (a) of the statutes and Article VII of the Bylaws) which can be found on the CEFIA web site **here**.

The foregoing items are not an exhaustive list of prohibited activities, and each director should familiarize himself or herself with the Code of Ethics for Public Officials.

Section 6. Outside Business Interests

Because of the statutory qualifications for membership on the CEFIA Board of Directors, it is expected that some directors will have outside business or professional interests related to energy resources or policy. Such outside interests are not considered to create a conflict of interest, provided that a director shall not participate in any deliberation or vote, and shall not take any other affirmative action as a director, with respect to a matter in which the director has an interest which is in substantial conflict with the proper discharge of the director's duties and responsibilities as a director of CEFIA. Determination of whether a "substantial conflict" exists is made in the manner provided in Section 1-85 of the Connecticut General Statutes. (See Selected Statutory References, Section 1-85 and CEFIA Bylaws, Article VII)

Section 7. Additional CEFIA Policies

Given that CEFIA is partially funded through a surcharge on consumers of electric services in the State of Connecticut and CEFIA's statutory mandate is to foster the growth, development, and commercialization of clean energy resources, and to stimulate demand for clean energy, among other things, CEFIA expects that, in addition to complying with the Code of Ethics for Public Officials and State Employees, that its directors will:

- Protect the confidential information to which CEFIA directors have access
- Avoid actual or potential conflicts of interest
- Neither interfere with nor solicit contracts on behalf of any person
- Submit the Statement of Financial Interests disclosure documents to the Office of State Ethics in a timely manner.

Section 8. Post-State Employment Restrictions

CEFIA directors are required to comply with the Code of Ethics provisions pertaining to post-state employment, which are commonly known as the "revolving door" provisions. For example, there are restrictions on accepting employment with a party to certain contracts (which would include contracts relating to investments or other financial assistance) if the director was involved in the negotiation or award of the contract, restrictions on representing other parties before CEFIA during a one-year period following departure from state service, and restrictions on accepting employment as a lobbyist or acting as a registrant if the director were convicted of any felony involving corrupt practices, abuse of office or breach of the public trust.

Directors should familiarize themselves with the statutes pertaining to post-state employment generally, which can be found at Connecticut General Statutes Sections 1-84a and 1-84b. (See Selected Statutory References). You may access these statutes **here**. A summary of these requirements is included in the *Guide to the Code of Ethics for Public Officials and State Employees*.

Section 9. CEFIA Staff

Directors understand that CEFIA employees are subject to the CEFIA Ethical Conduct Policy. Known or suspected breaches of the CEFIA Ethical Conduct Policy by such employees may require reporting to CEFIA's General Counsel acting as CEFIA's Ethics Compliance Officer and may require disciplinary action as provided by CEFIA's employment policies, in addition to sanctions provided by state law.

It is the responsibility of each CEFIA employee to inquire of the CEFIA Ethics Compliance Officer or the Office of State Ethics at 860-566-4472 should any question arise concerning his or her conduct.

Approved by the Clean Energy Finance and Investment Authority Board: ______________________, 2012.

CLEAN ENERGY FINANCE AND INVESTMENT AUTHORITY

BYLAWS

PURSUANT TO

Section 16-245n of the

Connecticut General Statutes

Adopted September 29, 2011~~August 3, 2011~~

Revised ~~September 29, 2011~~May 18, 2012

ARTICLE I
NAME, PLACE OF BUSINESS

1.1. **Name of the Authority**. The name of the Authority shall be, in accordance with the Statute, the "Clean Energy Finance and Investment Authority".

1.2. **Office of the Authority**. The office of the Authority shall be maintained at such place or places within the State of Connecticut as the Board may designate.

ARTICLE II
BOARD OF DIRECTORS

2.1. **Powers**. The powers of the Authority are vested in and exercised by a Board of Directors which may exercise all such authority and powers of the Authority and do all such lawful acts and things as are necessary to carry out the Comprehensive Plan and the purposes of the Authority as provided in the Resolution of Purposes, or as are otherwise authorized or permitted by the Statute or other provisions of the General Statutes, including the authorization of expenditures and use of funds from the Clean Energy Fund created by Section 16-245n(c) of the General Statutes, formerly known as the Renewable Energy Investment Fund, and the Green Connecticut Loan Guaranty Fund created by Section 16a-40f(b) of the General Statutes.

2.2. **Chairperson**. The Chairperson of the Board shall be appointed by the Governor. The Chairperson shall perform the duties imposed by the Statute, these Bylaws, and by resolution of the Board, and shall preside at all meetings of the Board which he or she attends. At each meeting the Chairperson shall submit such recommendations and information as the Chairperson may consider appropriate concerning the business, affairs, and policies of the Authority. The Chairperson shall serve at the pleasure of the Governor but no longer than the term of office of the Governor or until the Chairperson's successor is appointed and qualified, whichever is longer.

2.3. **Vice Chairperson**. The Board shall elect from its members a Vice Chairperson. The Vice Chairperson shall perform the duties imposed by the Statute, these Bylaws, and by resolution of the Board. In the absence or incapacity of the Chairperson, the Vice Chairperson shall perform all the duties and responsibilities of the Chairperson. In the absence or incapacity of the Vice Chairperson, or in case of his or her resignation or death, the Board shall elect its members an acting Vice Chairperson during the time of such absence or incapacity or until such time as the Board shall elect a new Vice Chairperson. The Vice Chairperson shall serve until a successor is elected by the Board.

2.4. **Secretary**. A Secretary may be elected by the Board. The Secretary shall perform the duties imposed by the Statute, these Bylaws, and by resolution of the Board. In the absence or incapacity of the Secretary, or in case of a resignation or death, the Board shall elect from their number an acting Secretary who shall perform the duties of the Secretary during the time of such absence or incapacity or until such time as the Board shall elect a new Secretary. The Secretary shall serve until a successor is elected by the Board.

2.5. **Delegation of Powers**. The Board may, by resolution, delegate to the President or other officers of the Authority such powers of the Authority as they believe are necessary, advisable, or desirable to permit the timely performance of the functions of the Authority and to carry out the plans, policies, procedures, and decisions of the Board, except that such delegation shall not include any duties or responsibilities required by the Statute or these Bylaws to be performed by the Chairperson or the Board or otherwise in conflict with law.

2.6. **Directors**. The Directors shall be appointed and serve as provided in the Statute.

ARTICLE III
OFFICERS AND EMPLOYEES

3.1. **Officers**. The Board shall have the power to create positions for such officers as it may deem to be in the interests of the Authority, and shall define the powers and duties of all such officers. All such officers shall be subject to the orders of the Board and serve at its pleasure. Such officers shall include a President and may include a Director of Finance and Chief Investment Officer, a General Counsel and such other officers as the Board may determine to be appropriate. The Board shall be responsible for determining or approving compensation for each officer.

3.2. **President**. The Board shall hire a President. The President shall be the chief executive officer of the Authority and shall have such duties and responsibilities as may be determined by the Board, except that the duties and responsibilities of the office of President shall not include those required by the Statute or these Bylaws to be performed by the Chairperson or the Board or otherwise in conflict with law. The President shall be a non-voting, *ex officio* member of the Board pursuant to the Statute. The Board may delegate to such other person or persons all or part of the duties of the President. The President may, with the approval of the Board, assign or delegate to the officers and employees of the Authority any of the powers that, in the opinion of the President, may be necessary, desirable, or appropriate for the prompt and orderly transaction of the business of the Authority.

3.3. **Acting President**. The Board may, by resolution adopted by a majority vote, appoint some other person to serve as Acting President and perform the duties of the President in the event of the death, inability, absence, or refusal to act of the President. The Acting President shall be subject to all of the same restrictions placed upon the President.

3.4. **Chief Investment Officer**. The Board may appoint a Chief Investment Officer (CIO). The CIO shall have such duties and responsibilities as may be determined by the Board, except that the duties and responsibilities of the office of CIO shall not include those required by the Statute or these Bylaws to be performed by the Chairperson or the Board or otherwise in conflict with law. The CIO shall not be a Director.

3.5. **General Counsel**. The Board may appoint a General Counsel. The General Counsel shall be the chief legal officer of the Authority and shall have such duties and responsibilities as may be determined by the Board, except that the duties and responsibilities of the office of General Counsel shall not include those required by the Statute or these Bylaws to be performed by the Chairperson or the Board or otherwise in conflict with law. The General Counsel shall not be a Director.

3.6. **Additional Officers and Other Personnel**. The Authority may from time to time employ such other personnel as it deems necessary to exercise its powers, duties, and functions pursuant to the Statute and any and all other laws of the State of Connecticut applicable thereto. The President shall develop a staffing plan which shall include without limitation a chart of positions and position descriptions for the Authority, personnel policies and procedures, and related compensation levels. Such staffing plan may provide for officers of the Authority in addition to those specifically provided for in these Bylaws, and the appointment of such officers shall be in the discretion of the

President, except as the Board may otherwise determine. The President shall deliver the staffing plan to the Budget and Operations Committee for its review and approval pursuant to Article V, Section 5.3.2 hereof.

3.7. **Signature Authority; Additional Duties**. The President and officers of the Authority shall have such signature authority as is provided in the Authority's Operating Procedures, and as may from time to time be provided by resolution of the Board. The officers of the Authority shall perform such other duties and functions as may from time to time be required.

ARTICLE IV
BOARD MEETINGS

4.1. **Regular Meetings**. Regular meetings of the Board or any Committee for the transaction of any lawful business of the Authority shall be held in accordance with a schedule of meetings established by the Board or such Committee, provided that the Board shall meet at least six (6) times per calendar year.

4.2. **Special Meetings**. The Chairperson may, when the Chairperson deems it expedient, call a special meeting of the Board for the purpose of transacting any business designated in the notice of such meeting. The Committee Chair of any Committee may, when the Committee Chair deems it expedient, call a special meeting of such Committee for the purpose of transacting any business designated in the notice of such meeting.

4.3. **Legal Requirements**. All meetings of the Board or any Committee shall be noticed and conducted in accordance with the applicable requirements of the Statute and the Connecticut Freedom of Information Act, including without limitation applicable requirements relating to the filing with the Secretary of the State of any schedule of regular meetings and notices of special meetings, meeting notices to Directors and Committee members, public meeting requirements, the filing and public availability of meeting agenda, the recording of votes and the posting or filing of minutes, the addition of agenda items at any regular meeting, and the holding of any executive session.

4.4. **Order of Business.** The order of business of any meeting of the Board or any Committee shall be as set forth in the agenda for such meeting, provided that the Board or Committee may vary the order of business in its discretion.

4.5. **Organization**.

4.5.1. At each meeting of the Board, the Chairperson, or in the absence of the Chairperson, the Vice Chairperson, or in the absence of both, a Director chosen by a majority of the Directors then present, shall act as Presiding Officer. The Secretary, or a staff member designated by the President, shall prepare or direct the preparation of a record of all business transacted at such meeting. Such record when adopted by the Directors at the next meeting and signed by the Chairperson or the Secretary shall be the official minutes of the meeting.

4.5.2. At each meeting of a Committee, the Committee Chair, or in the absence of the Committee Chair any other Committee member designated by the majority of the Committee members then present, shall act as Presiding Officer. The President, a staff member designated by the President, or any Committee member chosen by the Presiding Officer, shall prepare or direct the preparation of a record of the business transacted at such meeting. Such record when adopted by a majority of the Committee members in attendance at the next meeting and signed by the Committee Chair shall be the official minutes of the Committee meeting.

4.6. **Attendance**. A Director or a member of a Committee may participate in a meeting of the Board or of such Committee by means of teleconference, videoconference, or similar communications equipment enabling all Directors and Committee members participating in the meeting to hear one another, and participation in a meeting pursuant to this Section shall constitute presence in person at such a meeting. Directors or their designees who miss more than three (3) consecutive meetings shall be asked to become more active on the Board. In the event of further absence, the Board may decide by majority vote to recommend to the appointing authority that the appointment be reconsidered.

4.7. **Quorum**.

4.7.1. A majority of the Directors then in office shall constitute a quorum for the transaction of any business or the exercise of any power of the Authority.

4.7.2. A majority of the Director-members of a Committee shall constitute a quorum, provided that, except in the case of an advisory committee, such quorum shall consist of a minimum of three (3) Directors, at least one (1) of which shall not be a State employee.

4.8. **Enactment**. When a quorum is present, an affirmative vote of a majority of Directors in attendance at Board or Committee meetings shall be sufficient for action, including the passage of any resolution, except as may otherwise be required by these Bylaws or applicable law. Non-Director members of any Committee may participate in the Committee’s discussions and deliberations and may join in the Committee’s recommendations to the Board, but shall not have a vote on any matters as to which the Committee is exercising the powers of the Board, including without limitation, any funding decisions.

4.9. **Designation of Substitutes for Directors**. ~~As~~ If authorized by the Statute, then a Director may appoint a designee to serve as the Director's representative on the Board with full power to act and to vote on that Director's behalf. For the purposes of maintaining consistency and efficiency in Board matters, alternating attendance between the Director and his or her designee is strongly discouraged. If not authorized by statute, then a Director may not name or act through a designee. An authorized appointment of a designee shall be made by filing with the Board a short bio of the designee, the designee's CV, and a certificate substantially similar to the following:

"Certificate of Designation

I, ______________________________, a member of the Board of Directors of the Clean Energy Finance and Investment Authority, do hereby designate ___________________ [Name & Title] to represent me at the meetings of the Board or committees thereof with full powers to act and vote on my behalf. This designation shall be effective until expressly revoked in writing.

____

[Name]"

ARTICLE V
COMMITTEES

5.1. **Delegation Generally**. The Board may delegate any and all things necessary or convenient to carry out the purposes of the Authority to three (3) or more Directors, provided that at least one (1) of which shall not be a State employee, and, to the extent of powers, duties, or functions not by law reserved to the Board, to any officer or employee of the Authority as the Board in its discretion shall deem appropriate.

5.2. **Appointments; Quorum; Transaction of Business; Recordkeeping.**

5.2.1. **Appointments**. The Chairperson shall appoint all Committee Chairs. The Committee Chair need not be a Director on the Deployment Committee, the Technology Innovation Committee, any *ad hoc* committee, or an advisory committee.

5.2.2. **Quorum**. If necessary to achieve a quorum at any meeting of a Committee other than an advisory committee, then the Chairperson or the Vice Chairperson may sit, participate, and vote as an alternate member of such committee at such meeting.

5.2.3. **Report of Committee Actions**. Each Committee shall report to the Board on such Committee's actions and activities at the regular Board meeting next following each Committee meeting.

5.2.4. **Recordkeeping**. Committee recordkeeping shall be in accordance with Article IV, Section 4.5.2 hereof.

5.3. **Standing Committees**. The Authority shall have four (4) Standing Committees of the Board consisting of an Audit, Compliance, and Governance Committee, a Budget and Operations Committee, a Deployment Committee, and a Technology Innovation Committee. Each Standing Committee may form subcommittees in its discretion, but no such subcommittee shall exercise powers of the Board unless authorized by the Board to do so.

5.3.1. **Audit, Compliance, and Governance Committee**. The Audit, Compliance, and Governance Committee shall consist of no less than three (3) Directors appointed by the Chairperson on a biennial basis, at least one (1) of which shall not be a State employee. The principal functions, responsibilities, and areas of cognizance of the Audit, Compliance, and Governance Committee shall be as follows:

(i) recommendation to the Board as to the selection of auditors; (ii) meetings with the auditors to review the annual audit and formulation of an appropriate report and recommendations to the Board with respect to the approval of the audit report; (iii) review of the audit and compliance findings of the Auditors of Public Accounts, and meetings with the staff auditors there as appropriate; (iv) review with the auditors, President, and senior finance staff of the adequacy of internal accounting policies, procedures and controls; (v) review of the sufficiency of financial and compliance reports required by statute; (vi) recommendation to the Board as to the selection of the Authority's ethics liaison and ethics compliance officer(s); (vii) review of the adequacy of employee education and training on ethics and related legal requirements; (viii) review and approval of, and in its discretion recommendations to the Board regarding, all governance and administrative matters affecting the Authority, including but not limited to matters of corporate governance, corporate governance policies, committee structure and membership, management qualifications and evaluation, and Board and Standing Committee self-evaluation; (ix) oversight of the Authority's legal compliance programs, including but not limited to compliance with state contracting and ethics requirements; (x) management succession planning; (xi) oversight of any Director conflict of interest matters; (xii) as-needed review of any staff recommendations to the Board regarding the Authority's regulatory or policy initiatives including but not limited to the Comprehensive Plan and other clean energy regulatory or policy evidentiary matters before the Public Utilities Regulatory Authority and other state and federal commissions and tribunals that may affect clean energy development and/or the Authority's statutory mandate; (xiii) acting as a resource to the appointing authorities with respect to the identification and recruitment of qualified and interested private sector Director candidates; and (vi) the exercise of such authority as may from time to time be delegated by the Board to the Audit, Compliance, and Governance Committee within its areas of cognizance.

5.3.2. **Budget and Operations Committee**. The Budget and Operations Committee shall consist of no less than three (3) Directors appointed by the Chairperson on a biennial basis, at least one (1) of which shall not be a State employee. Additionally, the Chairperson or the Vice Chairperson shall be a non-voting *ex officio* member of the committee, subject to the provisions of Article V, Section 5.2.2 hereof. The principal functions, responsibilities, and areas of cognizance of the Budget and Operations Committee shall be as follows: (i) to recommend and monitor compliance with prudent fiscal policies, procedures, and practices to assure that the Authority has the financial resources and financial strategy necessary to carry out its statutory responsibilities and mission, including oversight of the Authority's budget process, asset and liability management, asset risk management, insurance and loss prevention, and performance measurement; (ii) recommendation to the Board as to approval of the annual operating budget and plan of operation; (iii) oversight of space planning and office leases, systems, and equipment, and procedures and practices with respect to purchasing; (iv) to recommend and monitor compliance with policies, programs, procedures, and practices to assure optimal organizational development, establishment of policies, programs, procedures and practices to assure optimal organizational development, the recruitment and retention of qualified personnel and the just and fair treatment of all employees of the Authority, including employment policies and practices, employee training, development, evaluation and advancement, employee compensation and benefits, and matters of employee separation and severance; (v) review and approval of the Authority staffing plan as developed by the President; (vi) with respect to reallocation of amounts between approved budget line items in excess of ten thousand dollars ($10,000) but not exceeding seventy-five thousand dollars ($75,000) in total, approval of such reallocation; (vii) with respect to increases to the operating budget or unbudgeted disbursements in amounts in excess of ten thousand ($10,000) but not exceeding seventy-five thousand ($75,000), approval of such increases; and (viii) the exercise of such authority as may from time to time be delegated by the Board to the Budget and Operations Committee within its areas of cognizance.

5.3.3. **Deployment Committee**. The Deployment Committee shall consist of no more than six (6) members total, consisting of no less than three (3) Directors and up to three (3) non-Directors, all appointed by the Chairperson on a biennial basis, and at least one (1) of the Director-members shall not be a State employee. Additionally, the State Treasurer, or her or his designee, shall be a voting *ex officio* member of the committee. Additionally, the Chairperson or the Vice Chairperson shall be a non-voting *ex officio* member of the committee, subject to the provisions of Article V, Section 5.2.2 hereof. The non-Director members of the Deployment Committee shall each have expertise in such areas as: project finance, levelized cost of clean energy, investment banking, commercial lending, tax-exempt or tax-advantaged financing or municipal banking, or clean energy policy. The principal functions, responsibilities, and areas of cognizance of the Deployment Committee shall be as follows: (i) to recommend and monitor compliance with program, project, and investment guidelines, criteria, policies, and practices supporting the Authority's statutory mission and management of such by the Authority's professional staff; (ii) with respect to loans, loan guarantees, loan loss reserves, credit enhancements, debt support programs, debt, debt-like, grants, equity, ~~and~~ near-equity, and related measurement and verification studies and evaluation audit funding requests, including but not limited to the On-Site Renewable Distributed Generation Program, the Residential Solar program, the Combined Heat and Power pilot program, the Anaerobic Digestion pilot program, and the Condominium Renewable Energy grant program, between three hundred thousand dollars ($300,000) and two million five hundred thousand dollars ($2,500,000), evaluation and approval of such requests on behalf of the Board; (iii) with respect to loans, loan guarantees, loan loss reserves, credit enhancements, debt support programs, debt, debt-like, grants, equity and near-equity funding requests which exceed two million five hundred thousand dollars ($2,500,000), evaluation of such requests and recommendation to the Board regarding such requests; (iv) oversight of policies and practices relating to the evaluation and recommendation of initial investments, follow-on investments, investment modifications and restructurings, and the sale or other disposition of investments by the Authority's professional investment staff; (v) oversight of policies and practices relating to investment management by the Authority's professional investment staff, including implementation of investment exit strategies; (vi) except to the extent of any investment powers expressly reserved to the Board itself in any resolution of the Board, to approve on behalf of the Board investments, follow-on investments, investment modifications and restructurings, and the sale or other disposition of investments; (vii) to review and recommend to the Board the issuance of bonds, notes or other obligations of the Authority, and upon such approval, to sell, issue and deliver such bonds, notes or obligations on behalf of the Authority; and (viii) the exercise of such other authority as may from time to time be delegated by the Board to the Deployment Committee within its areas of cognizance. Notwithstanding the foregoing, the Deployment Committee shall have no responsibility or authority with respect to funding or investment requests regarding projects or programs within the area of cognizance of the Technology Innovation Committee, as set forth in Article V, Section 5.3.4 hereof.

5.3.4. **Technology Innovation Committee**. The Technology Innovation Committee shall consist of no more than six (6) members total, consisting of no less than three (3) Directors and up to three (3) non-Directors, all appointed by the Chairperson on a biennial basis, and at least one (1) of the Director-members shall not be a State employee. Additionally, the State Treasurer, or her or his designee, shall be a voting *ex officio* member of the committee. Additionally, the Chairperson or the Vice Chairperson shall be a non-voting *ex officio* member of the Committee, subject to the provisions of Article V, Section 5.2.2 hereof. The non-Director members of the Technology Innovation Committee shall each have expertise in areas such as: domain technology knowledge, clean technology venture capital, or clean energy entrepreneurial operating experience. The principal functions, responsibilities, and areas of cognizance of the Technology Innovation Committee shall be as follows: (i) with respect to loans, loan guarantees, loan loss reserves, credit enhancements, debt support programs, debt, debt-like, grants, equity, ~~and~~ near-equity, and related measurement and verification studies and evaluation audit funding requests below one million five hundred thousand dollars ($1,500,000), evaluation and approval of such requests and investments on behalf of the Board; (ii) with respect to loans, loan guarantees, loan loss reserves, credit enhancements, debt support programs, debt, debt-like, grants, equity, and near-equity funding requests which exceed one million five hundred thousand dollars ($1,500,000), evaluation and recommendation to the Board regarding approval of such requests and investments; (iii) to recommend and monitor compliance with investment guidelines, criteria, policies, and practices supporting the Authority's statutory mission; (iv) oversight of policies and practices relating to the evaluation and recommendation of initial investments, follow-on investments, investment modifications and restructurings, and the sale or other disposition of investments by the Authority's professional investment staff; (v) oversight of policies and practices relating to investment management by the Authority's professional investment staff, including implementation of investment exit strategies; (vi) except to the extent of any investment powers expressly reserved to the Board itself in any resolution of the Board, to approve on behalf of the Board investments, follow-on investments, investment modifications and restructurings, and the sale or other disposition of investments; and (vii) the exercise of such authority as may from time to time be delegated by the Board to the Technology

Innovation Committee within its areas of cognizance. The projects and programs within the Technology Innovation Committee area of cognizance include but are not limited to pre-alpha projects, alpha projects, operational demonstration projects, equity or near-equity investments in companies, and other emerging technology initiatives.

5.3.5. Additional Standing Committees or *ad hoc* committees of the Board may be formed by the Board at its discretion by resolution setting forth the purposes and responsibilities of such additional Standing Committee or *ad hoc* committee. Each additional Standing Committee or *ad hoc* committee shall have at least three (3) members who are Directors, at least one (1) of which shall not be a State employee.

5.4. **Advisory Committees**.

5.4.1. The Board may form such advisory committees as the Board in its discretion may determine to be appropriate to advise and assist the Board, any Standing Committee of the Board, or management of the Authority in the performance of its statutory responsibilities. Such advisory committees may include as members such individuals as may be knowledgeable in the subject matter whether or not Directors or employees of the Authority.

5.4.2. Members of an advisory committee who are not Directors or employees of the Authority shall be considered "members of an advisory board" for purposes of the Connecticut Code of Ethics for Public Officials.

5.4.3. Public confidence in the recommendations and other actions of an advisory committee requires that advisory committee members avoid both actual conflicts of interest and situations that might give the appearance of a conflict of interest. It is to be expected, however, that many advisory committee members will have outside business or professional interests relating to the Authority's statutory mission. It is not intended that such outside business or professional interests be considered a conflict of interest, provided that an advisory committee member shall not participate in any deliberation or vote, and shall not take any other affirmative action as an advisory committee member, with respect to a matter in which such member has an interest which is in substantial conflict with the proper discharge of the duties and responsibilities of membership on the advisory committee. For this purpose, the determination of whether an advisory committee member has an interest which is in substantial conflict with the duties and responsibilities of membership on the advisory committee shall be made in the same manner as provided in Section 1-85 of the Connecticut General Statutes for conflicting interests of public officials. In addition to disclosures required by law, the existence and nature of any such substantial conflict shall be promptly disclosed to the Committee Chair.

ARTICLE VI
FISCAL YEAR

6.1. **Fiscal Year**. The fiscal year of the Authority shall extend from July 1 through the following June 30 except as the same may be otherwise determined by resolution of the Board.

ARTICLE VII
CONFLICTS OF INTEREST

7.1. Public confidence in the recommendations and other actions of the Board and Committees requires that Directors avoid both actual conflicts of interest and situations that might give the appearance of a conflict of interest. Given the statutory qualifications for membership on the Board, it is to be expected, however, that some Directors will have outside business or professional interests relating to the Authority's statutory mission. It is not intended that such outside business or professional interests be considered a conflict of interest, provided that a Director shall not participate in any deliberation or vote, and shall not take any other affirmative action as a Director or Committee member, with respect to a matter in which such Director has an interest which is in substantial conflict with the proper discharge of the duties and responsibilities of membership on the Board or such Committee. For this purpose, the determination of whether a Director has an interest which is in substantial conflict with the duties and responsibilities of membership on the Board or a Committee shall be made in the manner provided in Section 1-85 of the Connecticut General Statutes for conflicting interests of public officials. The existence and nature of any potential conflict of interest shall be promptly disclosed to the Chairperson (or, in the case of the Chairperson, to the Vice Chairperson) and otherwise as may be required by Section 1-86 of the Connecticut General Statutes.

7.2. With respect to potential conflicts of interest, as defined in Section 1-86(a) of the Connecticut General Statutes and pursuant thereto and pursuant to Section 1-81-30(c) of the Regulations of Connecticut State Agencies, the Member shall either (1) excuse himself or herself from participating in any deliberation or vote on the matter and may not otherwise take any affirmative action on the matter or (2) shall prepare a written statement prepared under penalty of false statement describing the matter requiring action and the nature of the potential conflict and explaining why, despite the potential conflict, such Member is able to vote and otherwise participate fairly, objectively, and in the public interest, and shall deliver a copy of such statement to the Office of State Ethics and shall enter a copy of the statement in the minutes of the Board or committee, as applicable.

7.3. In addition to the steps described in Section 7.1 and 7.2, above, a conflicted or potentially conflicted Director:

7.3.1. is strongly encouraged to leave the room during discussion and vote on the matter at hand; and

7.3.2. shall not participate in such discussion and vote; and

7.3.3. shall not have access to non-public confidential information regarding the matter at hand.

ARTICLE VIII
COMPENSATION

8.1. No Director or Committee member shall at any time receive or be entitled to receive any compensation for the performance of his or her duties as a Director, but may be reimbursed by the Authority for reasonable and necessary expenses incurred in the performance of such duties.

ARTICLE IX
PARLIAMENTARY AUTHORITY

9.1. Robert's Rules of Order, current revised edition, shall govern the proceedings of the Board when not in conflict with these Bylaws.

ARTICLE X
ROLE OF CONNECTICUT INNOVATIONS, INC.

10.1. **For Administrative Purposes Only**. Pursuant to the Statute, the Authority is within Connecticut, Innovations, Incorporated, for administrative purposes only. The relationship between the Authority and Connecticut Innovations, Inc., will be governed by the Statute, Conn. Gen. Stat. § 4-38f as if applicable to the relationship between the Authority and Connecticut Innovations, Incorporated, and other applicable law, and shall be memorialized in a contract for services.

ARTICLE XI
AMENDMENT

11.1. **Amendment or Repeal**. These Bylaws may be amended or repealed or new Bylaws may be adopted by the affirmative vote of a Super Majority of the Directors then in office. The Authority may adopt rules for the conduct of its business, and the adoption of such rules shall not constitute an amendment of these Bylaws.

ARTICLE XII
DEFINITIONS

12.1. **Definitions**. Unless the context shall otherwise require, the following words and terms shall have the following meanings:

12.1.1. "Authority" means the Clean Energy Finance and Investment Authority, as created and existing pursuant to the Statute.

12.1.2. "Board" means the board of directors of the Authority appointed and serving pursuant to the Statute.

12.1.3. "Chairperson" means the Chairperson of the Board appointed pursuant to the Statute.

12.1.4. "Committee" means any committee of or formed by the Board, including any Standing Committee, *ad hoc* committee, or advisory committee.

12.1.5. "Committee Chair" means the Chairperson of a Committee.

12.1.6. "Comprehensive Plan" means the plan developed by the Authority pursuant to section 16-245n(c) of the General Statutes.

12.1.7. "Connecticut Freedom of Information Act" means the Connecticut Freedom of Information Act, Connecticut General Statutes § 1-200 *et seq.*, as amended.

12.1.8. "Director" means a voting member of the Board appointed pursuant to the Statute.

12.1.9. "General Statutes" means the Connecticut General Statutes, as amended.

12.1.10. "Majority", whether capitalized or lowercase, means one more than half.

12.1.11. "President" means the President of the Authority hired by and serving at the pleasure of the Board of Directors of the Authority.

12.1.12. "Presiding Officer" has the meaning attributed to that term in Article IV, Section 4.5 of these Bylaws.

12.1.13. "Resolution of Purposes" means a resolution of the Board adopted pursuant to the penultimate sentence of Section 16-245n(d) of the General Statutes.

12.1.14. "Secretary" means the Secretary of the Board elected pursuant to the Statute and these Bylaws.

12.1.15. "Standing Committee" means a Standing Committee established by these Bylaws or another standing committee appointed by the Board for a specified period of time for the purpose of carrying out one or more functions of the Authority.

12.1.16. "Statute" means Connecticut General Statutes § 16-245n, as amended.

12.1.17. "Super Majority" means two thirds rounded up to the next whole integer.

12.1.18. "Vice Chairperson" means the Vice Chairperson of the Board elected pursuant to these Bylaws.

ARTICLE XIII
AUTHORITY

13.1. These Bylaws are adopted pursuant to the Statute and effective as of May 18, 2012~~July 1, 2011~~.

~~1975299v6~~

Renewable Energy Investments Board

Draft Minutes – Regular Meeting
Monday, June 20, 2011

A regular meeting of the **Renewable Energy Investments Board, also known as the Connecticut Clean Energy Fund Board** (the "Board"), was held on June 20, 2011, at the office of the Connecticut Clean Energy Fund, 865 Brook Street, Rocky Hill, CT.

1. Call to Order: Noting the presence of a quorum, Norma Glover, Chairperson of the Board, called the meeting to order at 12:06 p.m. Board members participating: Eric Brown; Norma Glover; Alan Greene (by phone); Bob Maddox; Carol Muradian; John Olsen; Matthew Ranelli; Rich Steeves representing the Office of Consumer Counsel; and Patricia Wrice.

Board members absent: Tracy Babbidge, representing the Commissioner of the Department of Environmental Protection; Mun Young Choi; Scott DeVico, representing Emergency Management and Homeland Security; and Raymond Wilson, representing the Secretary of the Office of Policy and Management.

Staff and Adjunct Staff Attending: George Bellas, Christin Cifaldi, Keith Frame, Bryan Garcia, David Goldberg, Dale Hedman, Shelly Mondo, Cheryl Samuels, Emily Smith, Kimberly Stevenson, Matthew Stone and Bob Wall.

2. Public Comments: There were no public comments.

3. Approval of Minutes: Ms. Glover asked the members of the Board to consider the minutes from the May 31, 2011, meeting.

> **Upon a motion made by Ms. Muradian, seconded by Mr. Steeves, the Board voted in favor of adopting the minutes from the May 31, 2011, meeting as presented (Ms. Wrice was not present for the vote).**

4. DEEP Commissioner Esty:

Mr. Garcia introduced Commissioner Esty. Mr. Esty explained the significance and importance of Senate Bill 1243 "An Act Concerning the Establishment of the Department of Energy and Environmental Protection and Planning for Connecticut's Energy Future" in helping to build a platform to make Connecticut an energy leader in the 21st century. He noted that clean energy is one of Governor Malloy's top priorities. Commissioner Esty stated that clean and cheaper energy is driving innovation, economic growth and job creation. Mr. Esty noted that this legislation is a result of the cooperation between the executive branch and legislature working together for a new vision of clean energy in Connecticut. He indicated that there was consensus between the parties on these critical issues. Commissioner Esty explained that the legislation creates a new Clean Energy Finance and Investment Authority to help leverage targeted government funds to engage the private sector. The focus of this new agency will be financing and finding ways to leverage private capital. The legislation also changes the Department of Environmental Protection to the Department of Energy and Environmental Protection ("DEEP") to allow DEEP to focus on energy policies and activities. The legislation also encourages cooperation and collaboration among the various governmental agencies in the State of Connecticut.

Mr. Esty thanked CI, the CI Board, and the CCEF Board for the work done to provide a platform to build upon. In particular, Commissioner Esty thanked Ms. Glover, Mr. Olsen, Mr. Ranelli and the CCEF Board for their support. He noted that there will be changes to the Board going forward. Commissioner Esty indicated the need to create a transition committee to help move from the Connecticut Clean Energy Fund to the CleanEnergy Finance and Investment Authority. He noted that a lot is expected, and he is eager to move this forward as quickly as possible. Mr. Esty asked the CCEF Board to consider ways to help make the transition smooth, including revised bylaws, revised operating procedures, designing the organizational structure and anything else that is needed and utilizing staff resources including Matt Stone and Bryan Garcia.

Ms. Glover mentioned that Commissioner Esty has asked her to chair the transition committee, and she will be appointing members to the transition committee.

Mr. Maddox cautioned that it may be ambitious to achieve all of the mandates in the legislation with respect to producing 10 times more megawatts of renewable energy. Commissioner Esty clarified that the target referred to by Mr. Maddox is not for renewables alone but included energy efficiency savings. He stated that the legislation represents the governor's commitment to getting projects completed. Commissioner Esty indicated the desire to work with the transition team to put together an institutional structure that will succeed.

5. <u>Chairman's Report</u>:

Ms. Glover noted that this is the last regularly scheduled meeting of the CCEF Board. In accordance with the legislation, the new authority begins July 1, 2011. Ms. Glover appointed the CCEF Executive Committee members—Norma Glover, John Olsen, Matthew Ranelli and Eric Brown—to the transition committee. She stated that the transition committee will also be making some programmatic suggestions to the Board of the new authority. Ms. Glover stated that the transition committee will be looking at the technologies that generate jobs and whether the workforce is ready and prepared.

Ms. Glover reported that she attended a fuel cell dedication ceremony at the Coca Cola plant in East Hartford. She recognized and encouraged others to view the wonderful artwork by a local high school student that is displayed at the facility.

6. <u>President's Report</u>:

Mr. Garcia discussed the <u>*CT Renewable Energy and Energy Efficiency Baseline Study*</u> performed by Navigant. A list of the data sources for the study was distributed. In summary, Mr. Garcia stated that the report indicates that both geothermal and solar thermal installations have the highest job creation potential. He indicated the need to plan for the future in terms of job creation and determine whether the workforce is in place to serve the demand. Several Board members noted the potential for both geothermal and solar thermal and the need to take steps to get solar thermal included as a Class I renewable energy. There was consensus that the CCEF take steps to get the Department of Public Utility Control to recognize Solar Thermal as a Class I renewable energy. A question arose regarding the readiness of the workforce for both solar and geothermal. Mr. Olsen stated that the workforce is ready with respect to solar thermal. However, the geothermal workforce may be more challenging.

A discussion ensued on the legislative mandates and some of the potential issues with how each of the agencies is funded (i.e. natural gas customers, electric customers and oil customers).

Mr. Garcia asked Attorney Stone to provide an update on the Department of Public Utility Control ("DPUC") Docket No. 10-03-17. Attorney Stone mentioned that the DPUC issued a draft approval of CCEF's Comprehensive Plan with a few recommendations and orders for the next Comprehensive Plan. CCEF filed written exceptions and indicated that changes would be necessary as a result of the new authority being created and the DPUC's recommendations and orders may not be consistent with the requirements in the new legislation. Mr. Stone noted that the new Board will take the recommendations into consideration as the new Comprehensive Plan is developed. Mr. Garcia stated that staff wanted to have a plan in place to help with the transition to the new authority, and the Comprehensive Plan approved by the DPUC will serve as a temporary bridge to get to the next iteration of the Comprehensive Plan which is required by S.B. 1243. Ms. Glover thanked Attorney Stone for his efforts with respect to the Comprehensive Plan.

Mr. Garcia reported that the fourth Regional Greenhouse Gas Initiative ("RGGI") auction took place, and the pricing was down considerably. In addition to the pricing being down, he expressed concern with the substantial reduction in the volume that was traded at the auction. A discussion ensued on the pullout of New Jersey and the potential pullout of New Hampshire. A suggestion was made to reduce the revenue projections for RGGI proceeds by 50 percent for the 2012 fiscal year. Mr. Garcia cautioned about relying on RGGI proceeds for the future.

Mr. Maddox suggested that the CCEF Board members meet with the new Board members to provide an historical briefing on certain issues.

7. <u>Projects Committee Report</u>:

Mr. Greene provided the Projects Committee report. He mentioned that the Projects Committee met on June 17 and approved an incentive of $471,300 for a 227.24 kW_{STC} PV system for Unified Realty LLC under the American Recovery and Reinvestment Act ("ARRA") Commercial Solar Photovoltaic ("PV") Program. The Projects Committee also approved an incentive of $389,970 for a 100.9 kW_{STC} solar photovoltaic system for the Windham Water Works project under the ARRA Commercial Solar PV Program.

8. Technology Committee Report:

Mr. Garcia reiterated that the new Clean Energy Finance and Investment Authority becomes effective July 1. However, there may be a need to discuss some issues or take some action with the CCEF Technology Committee before July 1. Mr. Frame mentioned that CCEF recently launched the Alpha Program, which received more responses than the Operational Demonstration Program. He stated that CCEF received approximately 20 applications, and staff is in the process of reviewing the applications before going to a judging panel. Mr. Frame indicated that after preliminary review, there are many good applications which are likely to be approved for funding. He stated that the Alpha projects provide a pipeline for the Operational Demonstration Program. Mr. Frame stated that as a result of some technical difficulties, modifications are being made to the OptiWind demonstration project, and staff will be recommending follow-on equity funding. He noted that it is hopeful that these issues can be discussed at a technology committee meeting to be scheduled before July 1.

9. Update on S.B. 1243:

Ms. Smith summarized how S.B. 1243 "An Act Concerning the Establishment of the Department of Energy and Environmental Protection and Planning for Connecticut's Energy Future" affects CCEF. She mentioned that the bill establishes a new quasi-public agency, the Clean Energy Finance and Investment Authority ("CEFIA"), which subsumes CCEF. Ms. Smith stated that there are significant program changes as well, including the creation of new programs. She indicated that the legislation shifts the state's focus from renewable energy to clean energy and energy efficiency. She noted that the transition to the new agency has to be done by July 1. Ms. Smith mentioned that she will be meeting with Mr. Longo and Mr. Garcia to discuss a smooth transition. Ms. Smith stated that this structure is a new model, and the chair of the Energy Committee encouraged comments if issues are encountered so that modifications can be made during the special legislative session.

A concern was expressed that the funding is not sufficient to accomplish all of the initiatives indicated in the legislation. Mr. Garcia explained that efforts will be made to utilize private sector funding. A discussion ensued on some of the proposed new programs. Mr. Garcia noted that the new agency will work in cooperation with the other agencies. A discussion ensued on the value of acquiring information and getting information out about CCEF and the programs being offered. Mr. Garcia explained some of the initial target markets for disseminating information, which include: 1) municipalities to show how property assessed clean energy programs apply to them; 2) the workforce communities and 3) the banking communities.

10. Transition—Clean Energy Finance and Investment Authority ("CEFIA"):

Mr. Garcia discussed some of the ways staff will be transitioning to the new Clean Energy Investment and Finance Authority. He talked about the importance of disseminating information and becoming more involved with stakeholders. Mr. Garcia indicated the need to obtain solid data and to be transparent with the data. He talked about moving forward to obtain a declaratory ruling to get solar thermal classified as a Class I renewable.

11. Solar Thermal Declaratory Ruling Update:

Mr. Goldberg mentioned that as requested by the CCEF Board, staff will proceed with developing a request for a declaratory ruling from the Department of Public Utility Control for solar thermal to be recognized as a Class I renewable energy source. Staff will be meeting with stakeholders to discuss how to develop the declaratory ruling request.

12. Collaboration between CCEF and CEEF on Connecticut Clean Energy Communities Program:

Mr. Wall mentioned that the CCEF Board and the Energy Conservation Management Board in August 2010 passed a resolution recommending that CCEF and ECMB partner on communities programs for the purpose of limiting ratepayer confusion, increasing program participation and more efficiently using ratepayer funds. A number of meetings have been held. Mr. Wall stated that the challenge is how to take a successful program, the *Connecticut Clean Energy Communities Program,* and make it even better. He indicated that the partners continue to meet to refine the joint program. Mr. Wall explained some of the issues still being discussed. He stated that the Connecticut Energy Efficiency Fund ("CEEF") has been asked to provide more information about certain energy efficiency elements intended to be incorporated into the program. CCEF also wants to see more equal financial commitment from CEEF. The CCEF Communities budget is currently $3,670,000, and the CEEF budget for 2011 allocates approximately $95,000 for actual program incentives. Mr. Wall stated that the partners have not yet agreed upon a program name. Richard Steeves commented that there was no point in changing the name of an already successful and established program. The Board discussed the success of CCEF's award-winning *Connecticut Clean Energy Communities Program* which has attracted commitments from more than 103 municipalities throughout the state. Mr. Wall was commended for his efforts.

13. Other Business:

Ms. Glover stated that she has enjoyed being chair of the Board and working with everyone. She indicated that she received a request from Dot Kelly, who arrived late, to provide public comments. Ms. Glover invited Ms. Kelly to provide comments.

Ms. Kelly spoke about the geothermal system that was installed at the public library in Darien. She stated that the bureaucratic reshuffling takes away from some of the energy of the agency, and she implored the current Board members to stay involved. Ms. Kelly talked about an application submitted by the Connecticut Resource Recovery Authority for the installation of solar panels at the Hartford Landfill. She discussed the project and stated that application was denied by CCEF. Mr. Garcia stated that he would look into this issue further. He stated that discussions will be held with project developers and consumers about the new zero-emissions renewable energy certificates and noted that there may be other opportunities to finance these types of projects.

14. Adjournment: Upon a motion made by Ms. Muradian, seconded by Mr. Olsen, the Board members voted unanimously in favor of adjourning the June 20, 2011, meeting at 1:40 p.m.

Respectfully submitted,

Norma Glover, Chairman

Matthew Ranelli, Secretary