845 Brook Street, Rocky Hill, CT 06067
T 860.563.0015
ctgreenbank.com

CONNECTICUT
GREEN BANK

March 3, 2017

Dear Connecticut Green Bank Board of Directors:

We have a special meeting of the Board of Directors scheduled on Friday, March 10, 2017 from 2:00 to 3:00 p.m. in the Colonel Albert Pope Board Room of the Connecticut Green Bank at 845 Brook Street, Rocky Hill, CT 06067.

On the agenda we have the following items:

- **Consent Agenda** – approval of the meeting minutes for the January 20, 2017 regular meeting and a recommendation from the Deployment Committee to review and approve a reallocation of the ARRA-SEP fund credit enhancements. The ARRA-SEP fund reallocation will result in Smart-E Loan funds that can be offered at low interest rates to support the Governor's Council on Climate Change efforts to encourage more renewable heating and cooling.

- **Staff Transaction Recommendations** – we will have several transactions that we are recommending for your review and approval, including:

    a. **Commercial and Industrial Sector** – C-PACE transaction in Brookfield.

    b. **Infrastructure Sector** – fuel cell power plant transaction in Danbury with Fuel Cell Energy.

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

We look forward to seeing you next week.

Sincerely,

Bryan Garcia
President and CEO

AGENDA (REVISED)

Board of Directors of the
Connecticut Green Bank
845 Brook Street
Rocky Hill, CT 06067

Friday, March 10, 2017
2:00-3:00 p.m.

Staff Invited: George Bellas, Craig Connolly, Mackey Dykes, Brian Farnen, Bryan Garcia, Ben Healey, Dale Hedman, Bert Hunter, Kerry O'Neill, and Eric Shrago

1. Call to order

2. Public Comments – 5 minutes

3. Consent Agenda* – 5 minutes

   a. Approval of Meeting Minutes for January 20, 2017*
   ~~b. Approval of Deployment Committee Recommendations on ARRA-SEP Credit Enhancements*~~

4. Staff Transaction Recommendation* – 50 minutes

   a. Residential Sector Program Transaction Recommendations – 5 minutes

      i. ARRA-SEP Credit Enhancements* – 5 minutes

   ~~a.~~b. Commercial, Industrial, and Institutional Sector Program Transaction Recommendations – 5 minutes

      i. C-PACE Transaction (Brookfield)* – 5 minutes

   ~~b.~~c. Statutory and Infrastructure Sector Program Transaction Recommendation*

      i. Triangle Street Fuel Cell Energy Project* – ~~45~~ 40 minutes

5. Adjourn

*Denotes item requiring Board action

Join the meeting online at https://global.gotomeeting.com/join/785484413

Or call in using your telephone:

Dial (408) 650-3123
Access Code: 785-484-413

Next Regular Meeting: Friday, April 28, 2017 from 9:00-11:00 a.m.
Connecticut Green Bank, 845 Brook Street, Rocky Hill, CT

RESOLUTIONS (REVISED)

Board of Directors of the
Connecticut Green Bank
845 Brook Street
Rocky Hill, CT 06067

Friday, March 10, 2017
2:00-3:00 p.m.

Staff Invited: George Bellas, Craig Connolly, Mackey Dykes, Brian Farnen, Bryan Garcia, Ben Healey, Dale Hedman, Bert Hunter, Kerry O'Neill, and Eric Shrago

1. Call to order

2. Public Comments – 5 minutes

3. Consent Agenda* – 5 minutes

   a. Approval of Meeting Minutes for January 20, 2017*

   Resolution #1

   Motion to approve the minutes of the Board of Directors Meeting for January 20, 2017

   ~~b. Approval of Deployment Committee Recommendations on ARRA-SEP Credit Enhancements*~~

4. Staff Transaction Recommendation* – 50 minutes

   a. Residential Sector Program Transaction Recommendations – 5 minutes

      i. ARRA-SEP Credit Enhancements* – 5 minutes

   Resolution #2

   WHEREAS, in July of 2011, the Connecticut General Assembly passed Public Act 11-80, "AN ACT CONCERNING THE ESTABLISHMENT OF THE DEPARTMENT OF ENERGY AND ENVIRONMENTAL PROTECTION AND PLANNING FOR CONNECTICUT'S ENERGY FUTURE," which created the Connecticut Green Bank (the "Green Bank") to develop programs to finance and otherwise support clean energy investment in residential projects per the definition of clean energy in CGS Section 16-245n(a);

WHEREAS, in February of 2013, the DEEP released the Comprehensive Energy Strategy ("CES") for Connecticut that includes developing financing programs that leverage private capital to make clean energy investments more affordable, including the pilot Smart-E Loan residential financing program;

WHEREAS, the Governor's Council on Climate Change has identified the need to support renewable heating and cooling and electric vehicles to support the implementation of the Global Warming Solutions Act goal of reducing 80 percent of greenhouse gas emissions from a baseline year of 2001 by the year 2050;

WHEREAS, in May of 2013, Green Bank launched the Smart-E Loan program, currently operating statewide, with 10 credit unions and community banks and one community development financial institution providing low cost and long-term financing for measures that are consistent with the state energy policy and the implementation of the CES. The Smart-E Loan currently includes $4.3 million of credit enhancement, including both repurposed ARRA-SEP and Green Bank funds, to attract nearly $30 million of private investment from local financial institutions;

WHEREAS, the Deployment Committee recommended on February 27, 2017 that the Board of Directors approve the proposed relocation of ARRA-SEP funds in amounts materially consistent with the Memorandum presented to the Committee dated February 21, 2017.

NOW, therefore be it:

RESOLVED, that the Green Bank Board of Directors (the "Board") approves funding for loan loss reserves and interest rate buydowns ("Credit Enhancements") through the use of repurposed American Recovery and Reinvestment Act State Energy Program ("ARRA-SEP") program funds be approved for Green Bank's Cozy Home Loans, Smart-E Loans, CT Solar Loan, and LIME Loan programs (the "Programs") in amounts materially consistent with the Memorandum presented to the Board dated March 3, 2017.

RESOLVED, that the Board approves ARRA-SEP funds for the Programs in the not-to-exceed set forth below and that the President of the Green Bank; and any other duly authorized officer of the Green Bank, is authorized to use their best discretion to utilize the most effective use of the entirety of the ARRA-SEP Credit Enhancements in amounts not to exceed:

a. $28,793 for Cozy Home Loans;
b. $7,564,227 for Smart-E Loans;
c. $468,600 for CT Solar Loan; and
d. $300,000 for LIME Loan.

RESOLVED, that the Board approves Green Bank funds for Loan Loss Reserves for the Smart-E Loan Program in the not-to-exceed amount of $1,869,884 including $1,110,608 of additional funds and $759,276 of already approved FY17 budgeted funds.

RESOLVED, that the Board approves Green Bank funds for Loan Loss Reserves for the CT Solar Lease Program in the not-to-exceed amount of $3,500,000.

RESOLVED, that the Board approves Green Bank funds for Loan Loss Reserves for the LIME Loan Program in the not-to-exceed amount of $325,000.

~~a.~~b. Commercial, Industrial, and Institutional Sector Program Transaction Recommendations – 5 minutes

i. C-PACE Transaction (Brookfield)* – 5 minutes

Resolution #3

WHEREAS, pursuant to Section 16a-40g of the Connecticut General Statutes, as amended, (the "Act"), the Connecticut Green Bank (the "Green Bank") is directed to, amongst other things, establish a commercial sustainable energy program for Connecticut, known as Commercial Property Assessed Clean Energy ("C-PACE");

WHEREAS, the Green Bank Board of Directors (the "Board") has approved a $40,000,000 C-PACE construction and term loan program;

WHEREAS, the Green Bank seeks to provide a $449,519 construction and (potentially) term loan under the C-PACE program to St. Joseph's Church, the building owner of 5 Obtuse Hill, Brookfield, Connecticut (the "Loan"), to finance the construction of specified clean energy measures in line with the State's Comprehensive Energy Strategy and the Green Bank's Strategic Plan; and

NOW, therefore be it:

RESOLVED, that the President of the Green Bank and any duly authorized officer of the Green Bank is authorized to execute and deliver the Loan in an amount not to be greater than one hundred ten percent of the Loan amount with terms and conditions consistent with the memorandum submitted to the Board of Directors dated March 10, 2017, and as he or she shall deem to be in the interests of the Green Bank and the ratepayers no later than 120 days from the date of this authorization;

RESOLVED, that before executing the Loan, the President of the Green Bank and any other duly authorized officer of the Green Bank shall receive confirmation that the C-PACE transaction meets the statutory obligations of the Act, including but not limited to the savings to investment ratio and lender consent requirements; and

RESOLVED, that the proper the Green Bank officers are authorized and empowered to do all other acts and execute and deliver all other documents and instruments as they shall deem necessary and desirable to effect the above-mentioned legal instruments.

~~b.~~c. Statutory and Infrastructure Sector Program Transaction Recommendation*

i. Triangle Street Fuel Cell Energy Project* – 45 minutes

Resolution #4

WHEREAS, in accordance with (1) the statutory mandate of the Connecticut Green Bank ("Green Bank") to foster the growth, development, and deployment of clean energy sources that serve end-use customers in the State of Connecticut, (2) the State's Comprehensive Energy Strategy ("CES") and Integrated Resources Plan ("IRP"), and (3)

Green Bank's Comprehensive Plan for Fiscal Years 2017 and 2018 (the "Comprehensive Plan") in reference to the CES and IRP, Green Bank continuously aims to develop financing tools to further drive private capital investment into clean energy projects;

WHEREAS, FuelCell Energy, Inc., of Danbury, Connecticut ("FCE") has used previously committed funding (the "Bridgeport Loan") from Green Bank to successfully develop a 15 megawatt fuel cell facility in Bridgeport, Connecticut (the "Bridgeport Project"), and FCE has operated and maintained the Bridgeport Project without material incident, is current on payments under the Bridgeport Loan, and has requested financing support from the Green Bank to develop a 3.7 megawatt high efficiency fuel cell project in Danbury, Connecticut (the "Project");

WHEREAS, staff has considered the merits of the Project and the ability of FCE to construct, operate and maintain the facility, support the obligations under the Loan throughout its 20 year life, and as set forth in the due diligence memorandum dated March 10, 2017, has recommended this support be in the form of a term loan not to exceed $5,000,000, secured by all project assets, contracts and revenues as well as an unconditional performance and payment guarantee of FCE (the "Term Loan");

WHEREAS, Green Bank staff recommends that the Green Bank Board of Directors ("Board") approve of the Term Loan, in an amount not to exceed $5,000,000.

NOW, therefore be it:

RESOLVED, that the Green Bank Board of Directors hereby approves the Term Loan in an amount not to exceed $5,000,000 for the Project, as a strategic selection and award pursuant to Green Bank Operating Procedures Section XII; and

RESOLVED, that the President of the Green Bank and any other duly authorized officer is authorized to take appropriate actions to make the Term Loan to FCE (or a special purpose entity wholly-owned by FCE) in an amount not to exceed $5,000,000 with terms and conditions consistent with the memorandum submitted to the Board dated March 10, 2017, and as he or she shall deem to be in the interests of the Green Bank and the ratepayers no later than 180 days from the date of authorization by the Board of Directors; and

RESOLVED, that the proper Green Bank officers are authorized and empowered to do all other acts and execute and deliver all other documents and instruments as they shall deem necessary and desirable to effect the above-mentioned Term Loan.

5. Adjourn

*Denotes item requiring Board action

Join the meeting online at https://global.gotomeeting.com/join/785484413

Or call in using your telephone:

Dial (408) 650-3123
Access Code: 785-484-413

Next Regular Meeting: Friday, April 28, 2017 from 9:00-11:00 a.m.
Connecticut Green Bank, 845 Brook Street, Rocky Hill, CT

CONNECTICUT GREEN BANK SM

Board of Directors Meeting

March 10, 2017

Board of Directors

Agenda Item #1

Call to Order

Board of Directors

Agenda Item #2

Public Comments

Board of Directors

Agenda Item #3

Consent Agenda

Consent Agenda
Resolution 1

1. **Meeting Minutes** – approval of meeting minutes of January 20, 2017

Board of Directors

Agenda Item #4 – Staff Transaction Recommendations and Updates

Board of Directors

Agenda Item #4ai – Residential Sector Program Transaction Recommendation Smart-E Loan and ARRA-SEP Credit Enhancement Reallocations

Smart-E and ARRA-SEP Reallocations

CONNECTICUT GREEN BANK

Background

- Current allocations of ARRA-SEP across 5 residential programs:

Product	Not-to-Exceed ARRA-SEP Amount	Loan Loss Reserve Allocation	IRB Allocation	IRB Expended (as of 2/1/17)	# and Amount of Defaults to Date
Cozy Home Loan	$28,793	$17,193	$11,600	$11,600	0, $0
Smart-E Loan	$3,422,584	$1,110,608	$2,311,976	$1,007,893	2, $51,130
Solar Loan	$468,600	$300,000	$168,600	$168,600	0, $0
Solar Lease	$3,816,643	$3,500,000	$316,643	$0	1, $26,007
C4C LIME Loan	$625,000	$625,000	$0	$0	0, $0
Total	**$8,361,620**	**$5,552,801**	**$2,808,819**	**$1,188,093**	**3, $77,137**

Goal of Reallocations

- Expend ARRA-SEP dollars more quickly by reallocating funds in Loan Loss Reserves ("LLRs") over to Smart-E Interest Rate Buydowns
  - There have been no "calls" on loss reserves as of yet, defaults are 0.11% of principal originated
- Backfill Program Loan Loss Reserves with Green Bank funds
- Follow-up from strategic retreat to support GC3 and RH&C market

Smart-E and ARRA-SEP Reallocations

Request – ARRA-SEP Reallocations

- Replace the Smart-E LLR with Green Bank funds and use the ARRA funds for Smart-E IRBs;
- Replace the CT Solar Lease LLR with Green Bank funds and reallocate all CT Solar Lease ARRA funds to Smart-E IRBs; and
- Replace a portion of LIME loss reserve ($325,000 that is approved but not yet committed) with Green Bank funds and reallocate those funds to Smart-E IRBs

Request – Non-ARRA Green Bank Funds

- Use $4,935,608 of Green Bank funds for LLRs across following programs:
  - $1,110,608 for Smart-E (in addition to FY17 budget amount of $759,276)
  - $3,500,000 for CT Solar Lease
  - $ 325,000 for LIME Loan

Smart-E and ARRA-SEP Reallocations

CONNECTICUT GREEN BANK

Outcome

- Obligate more CGB funds for LLRs
  - Going from $0 to $1.1M after BoD approval *(for current Smart-E obligations, and $3.5M for CT Solar Lease and investor amendments)*
- Support the Comprehensive Energy Strategy and Governor's Council on Climate Change and strategic electrification of renewable heating, cooling and transportation
- Pursue more aggressive Smart-E special offers for things like renewable thermal technologies, EV rechargers, solar bundles, near net-zero home energy retrofits

Programs	Not-to-Exceed ARRA-SEP Amount	ARRA-SEP Loan Loss Reserve Allocation	ARRA-SEP IRB Allocation	Green Bank LLR Funds Required
Cozy Home Loan	$28,793	$17,193	$11,600	$0
Smart-E Loan	$7,564,227	$0	$7,564,227	$1,110,608
Solar Loan	$468,600	$300,000	$168,600	
Solar Lease				$3,500,000
C4C LIME Loan	$300,000	$300,000	$0	$325,000
Total	**$8,361,620**	**$617,193**	**$7,744,427**	**$4,935,608**

Smart-E and ARRA-SEP Reallocations

NOW, therefore be it:

RESOLVED, that the Green Bank Board of Directors (the "Board") approves funding for loan loss reserves and interest rate buydowns ("Credit Enhancements") through the use of repurposed American Recovery and Reinvestment Act State Energy Program ("ARRA-SEP") program funds be approved for Green Bank's Cozy Home Loans, Smart-E Loans, CT Solar Loan, and LIME Loan programs (the "Programs") in amounts materially consistent with the Memorandum presented to the Board dated March 3, 2017.

RESOLVED, that the Board approves ARRA-SEP funds for the Programs in the not-to-exceed set forth below and that the President of the Green Bank; and any other duly authorized officer of the Green Bank, is authorized to use their best discretion to utilize the most effective use of the entirety of the ARRA-SEP Credit Enhancements in amounts not to exceed:

- $ 28,793 for Cozy Home Loans;
- $7,564,227 for Smart-E Loans;
- $ 468,600 for CT Solar Loan; and
- $ 300,000 for LIME Loan.

Smart-E and ARRA-SEP Reallocations

RESOLVED, that the Board approves Green Bank funds for Loan Loss Reserves for the Smart-E Loan Program in the not-to-exceed amount of $1,869,884 including $1,110,608 of additional funds and $759,276 of already approved FY17 budgeted funds.

RESOLVED, that the Board approves Green Bank funds for Loan Loss Reserves for the CT Solar Lease Program in the not-to-exceed amount of $3,500,000.

RESOLVED, that the Board approves Green Bank funds for Loan Loss Reserves for the LIME Loan Program in the not-to-exceed amount of $325,000.

Board of Directors

Agenda Item #4bi – Commercial, Industrial, and Institutional Sector Program Transaction Recommendation

C-PACE (Brookfield)

5 Obtuse Hill, Brookfield Ratepayer Payback

- **$449,519** for a lighting retrofit and controls
- Projected savings are **19,982 MMBtu** versus **$449,519** of ratepayer funds at risk.

- Ratepayer funds will be paid back in one of the following ways
  - (a) through a take-out by a private capital provider at the end of construction (project completion);
  - (b) subsequently, when the loan is sold down to a private capital provider; or
  - (c) through receipt of funds from the Town of Brookfield as it collects the C-PACE benefit assessment from the property owner.

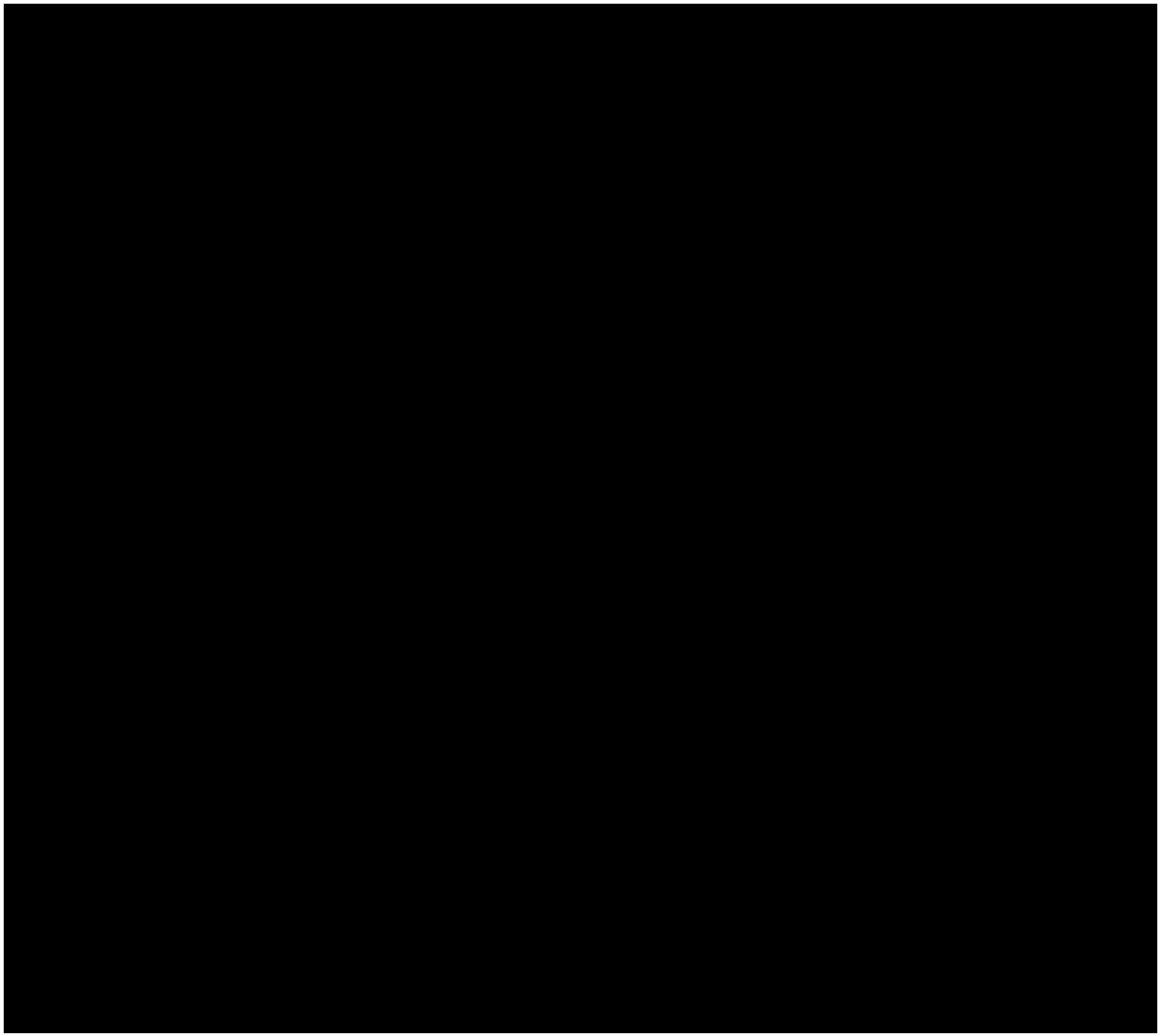
5 Obtuse Hill, Brookfield
Terms and Conditions

- **$449,519** construction loan at 5% and term loan set at a fixed 5.75% over the 20-year term
- **$449,519** loan against the property
  - Property valued at [redacted]
  - Loan-to-value ratio equals [redacted]; Lien-to-value ratio equals [redacted]
- DSCR > [redacted]

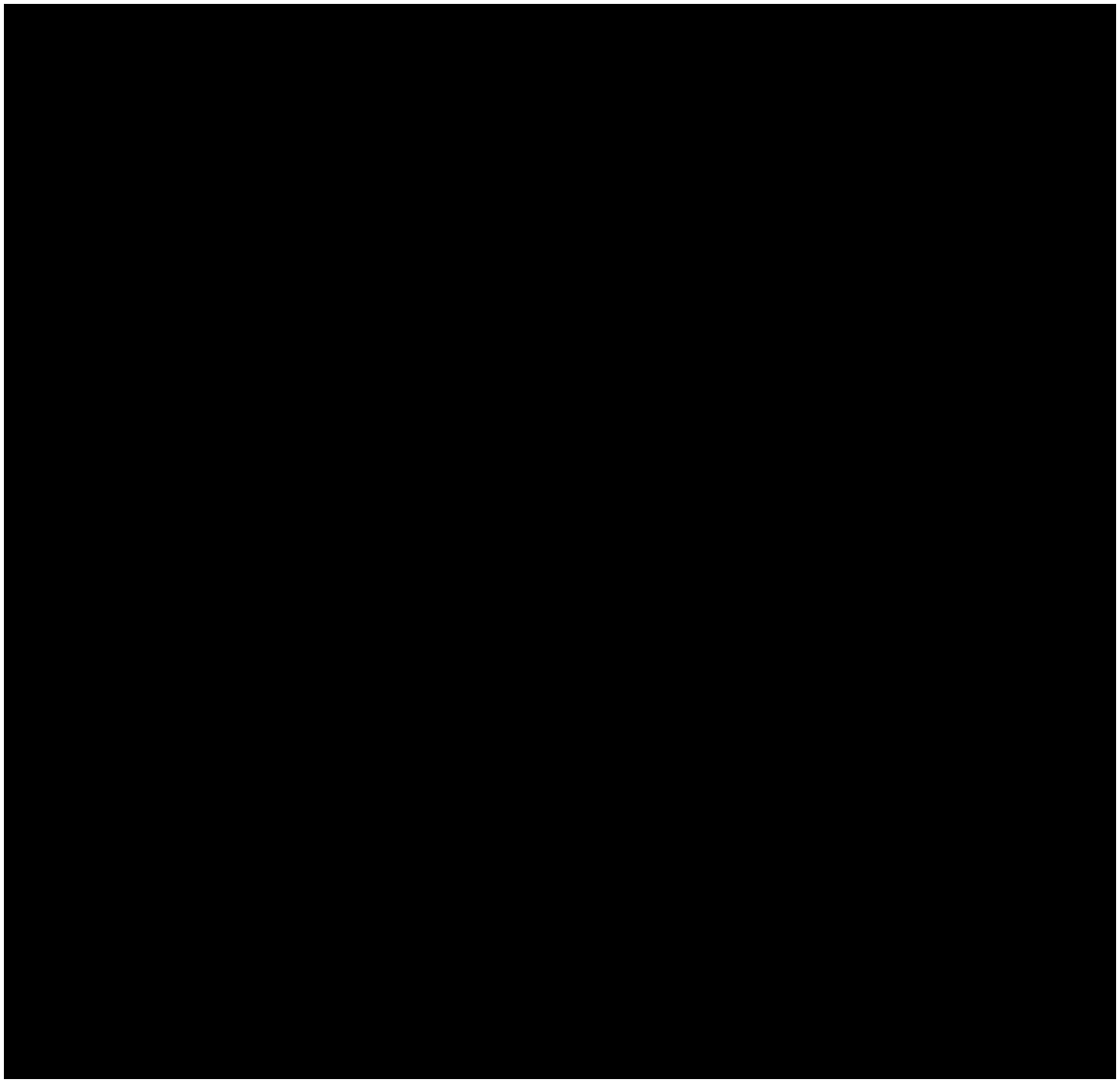
5 Obtuse Hill, Brookfield
The Five W's

- **What?** Receive approval for a **$**449,519 construction and (potentially) term loan under the C-PACE program to St. Joseph's Church to finance the construction of specified energy upgrade
- **When?** Project to commence 2017
- **Why?** Allow Green Bank to finance this C-PACE transaction, continue to build momentum in the market, and potentially provide term financing for this project until Green Bank sells it along with its other loan positions in C-PACE transactions.
- **Who?** St. Joseph's Church , the property owner of 5 Obtuse Hill, Brookfield CT
- **Where?** 5 Obtuse Hill, Brookfield CT

5 Obtuse Hill, Brookfield
Project Tear Sheet



5 Obtuse Hill, Brookfield
Key Financial Metrics



Board of Directors

Agenda Item #4ci – Infrastructure Sector Program Transaction Recommendation

Triangle Street Fuel Cell Energy Project

FCE: Triangle St. Credit Facility: *Project Summary*

- 3.7 MW fuel cell located at 64 Triangle Street, Danbury, CT
  - – $[redacted] project
  - – Manufactured, owned, operated, and maintained by FCE
  - – 10,000 square foot industrial equipment yard conversion
  - – 30 direct/indirect local jobs
  - – Expected ~$700,000 system sales tax revenue to the state
  - – Up to $1,000,000 in property tax revenue over 20 years to the city
  - – Clean, reliable power derived from natural gas and directed into the grid

- Inaugural launch, at scale, of latest configuration of FCE's high-efficiency fuel cell technology (DFC4000)
  - – Capable of achieving up to [redacted]% electric power generation system efficiency (compared with [redacted]% in previous configurations)
  - – Expected to offset 129,502 tons of CO_2, or 14.6% of expected emissions reductions from all Green Bank financing and development activities in FY2016

FCE: Triangle St. Credit Facility: *Financing Summary*

- **$5 million** senior secured Green Bank term loan supporting a $[redacted] project with the remaining balance financed with development capital sourced by FCE
  - No construction risk – commissioning to ensure production criteria achieved
  - Unconditional FCE payment and performance guaranty
  - First priority perfected lien on all project assets and cash flows
  - $[redacted] cash collateral available early in Year 8+ (Jan 2025)
  - [redacted]% Expected Interest Rate; [redacted]% Minimum Interest Rate
  - 20 Year term, fully amortizing (@ [redacted]%)
  - Bullet repayment for all principal outstanding and accrued, but unpaid interest
    - *Backed by $[redacted] cash collateral and FCE payment guaranty*
    - *$[redacted] bullet (Principal + Interest (@ [redacted]%) Carryover) under downside scenario*
- "Merchant" project – repayment exposure to variable energy production AND spot market pricing
  - Wholesale electric power sales, Class I REC sales, & capacity payments
  - 3rd party energy services provider – multi-year pricing "strips"

FCE: Triangle St. Credit Facility: *Strategic Selection & Importance*

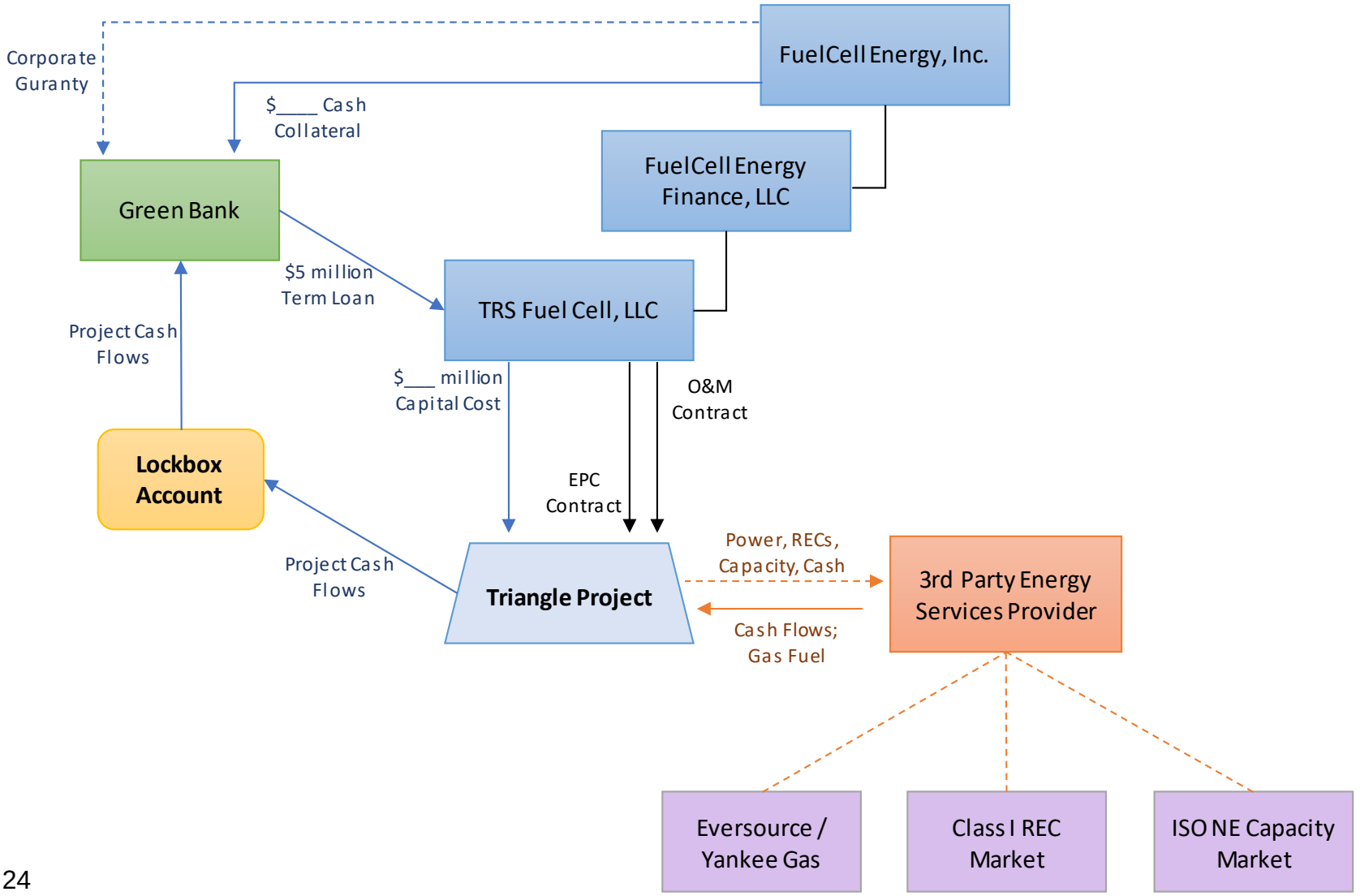
CGB Strategic Criteria	FCE Considerations
Special Capabilities	• Significant market experience • Locally domiciled (manufacturing & servicing) • Market pivot from subsidies via cost reductions
Uniqueness	• Innovative high efficiency technology • Project is sited and under construction • $[redacted] of FCE development capital
Strategic Importance	• Job creation/retention • Economic development • Reliable energy / CO2 reduction / negligible NOX - SOX
Urgency/Timeliness	• Adverse industry shocks • Increased capital, financing, & operating costs • Shift to long-term, sustainable growth
Multiphase Project	• Additional strategic FCE assets • Greater fuel cell industry penetration

FCE: Triangle St. Credit Facility:
Risk Profile + Mitigants

CONNECTICUT GREEN BANK

Risk	*Description*	Mitigants
FCE Corporate Risk	*FCE as a going concern for reliable guaranty*	· Strategic LT Shift - B/S projects + pipeline · Technology innovation · Cost reductions · Diversified business mix · B/S cash + credit facilities
Merchant Risk	*Impact of variable production AND pricing on cash flows*	· Corporate guaranty · Secured by project assets & cash flows · Cash collateral · Escrow account · Sensitivity analysis
Technology Risk	*Inaugural launch of new, high efficiency fuel cell*	· Term loan advance @ COD · Product testing · FCE experience & expertise
Production Risk	*Operations = expectations*	· Annual cash allocations for O&M · FCE to operate & maintain · $____ of invested development capital
Commodity Risk	*Variable natural pricing and availability*	· 2-5 year gas pricing strips with 3rd party · Revenue/output vs. Cost/input counterbalance · Non-gas related operating components
Market Risk	*Variable merchant spot markets*	· 2-5 year pricing/financing strips with 3rd party
Portfolio Risk	*Total Green Bank exposure*	· Combination of all above-listed mitigants · Sensitivity analysis

FCE: Triangle St. Credit Facility:
Capital Flow Diagram



FCE: Triangle St. Credit Facility:
FCE Business Model

CONNECTICUT GREEN BANK

Revenue classification	*Sources of revenue*	*Growth drivers*
Product	• Plant sales / Utility rate-base • Project sale at operation	Large developed pipeline, Utility markets & International growth
Generation	• 11 MW operating portfolio • 7 MW under construction	Project finance & Expanding market opportunities
Service & license	• Long term recurring revenue • Growing fleet with product sales	Optimizing & Growing Service portfolio
Advanced technologies	• Growing share of private contracts • Project sizes increasing	Carbon capture, Hydrogen & Storage

FCE-owned Project Portfolio		
Market	**MW**	**State**
Healthcare	1.4	CA
Wastewater	1.4	CA
Industrial & Process	5.6	CT
Government	1.4	CA
Education	1.4	CT
Total operating	**11.2**	
Under construction		
Wastewater	2.8	CA
Grid support	3.7	CT
Under construction	**6.5**	
Total	**17.7**	
Near term on-site pipeline	*~14*	

Building sustainable revenue growth & gross profit

FCE: Triangle St. Credit Facility: *Resolutions*

RESOLVED, that the Green Bank Board of Directors hereby approves the Term Loan in an amount not to exceed $5,000,000 for the Project, as a strategic selection and award pursuant to Green Bank Operating Procedures Section XII; and

RESOLVED, that the President of the Green Bank and any other duly authorized officer is authorized to take appropriate actions to make the Term Loan to FCE (or a special purpose entity wholly-owned by FCE) in an amount not to exceed $5,000,000 with terms and conditions consistent with the memorandum submitted to the Board dated March 10, 2017, and as he or she shall deem to be in the interests of the Green Bank and the ratepayers no later than 180 days from the date of authorization by the Board of Directors; and

RESOLVED, that the proper Green Bank officers are authorized and empowered to do all other acts and execute and deliver all other documents and instruments as they shall deem necessary and desirable to effect the above-mentioned Term Loan.

CONNECTICUT GREEN BANK

Board of Directors

Agenda Item #5 – Adjourn

CONNECTICUT GREEN BANK

Board of Directors
Draft Minutes
Friday, January 20, 2017

A regular meeting of the Board of Directors of the **Connecticut Green Bank (the "Green Bank")** was held on January 20, 2017 at the office of the Green Bank, 845 Brook Street, Rocky Hill, CT, in the Colonel Albert Pope board room.

1. **Call to Order**

   Catherine Smith, Chairperson of the Green Bank, called the meeting to order at 9:04 a.m. Board members participating: Matt Ranelli, Rob Klee, Mun Choi, John Harrity, and Reed Hundt (by phone)

   Members Absent: Bettina Bronisz, Norma Glover, Pat Wrice, Kevin Walsh, and Tom Flynn

   Others Attending:

   Staff Attending: Bryan Garcia, Cheryl Samuels, Bert Hunter, Brian Farnen, Kerry O'Neill, Mackey Dykes, Dale Hedman, Kim Stevenson, Craig Connolly, Andrea Janecko, Anthony Clark, Alex Kovtunenko, George Bellas, Fiona Stewart, Chris Magalhaes, Eric Shrago, Jane Murphy, Rudy Sturk, Ben Healey and Mariana Trief (by phone).

2. **Public Comments**

   There were no public comments.

3. **Consent Agenda**

   Upon a motion made by Commissioner Klee and, seconded by John Harrity, the Consent Agenda passed unanimously.

   a. **Approval of Meeting Minutes for December 16, 2016* and January 5, 2017***

      Resolution #1

      Motion to approve the minutes of the Board of Directors Meeting for December 16, 2016

      Resolution #2

      Motion to approve the minutes of the Board of Directors Meeting for January 5, 2017

   b. **Position Description***

      Resolution #3

      Motion to approve the position description for Vice President of Residential Programs

   c. **Financial Statement for November 2016**

d. Comprehensive Annual Financial Report for FY 2016

e. Hannover Pond Update

f. Acknowledgement and Recognition

Commissioner Smith recognized Mun Choi for his contributions and congratulated him on his new endeavor. Bryan Garcia also recognized him for his contributions and presented him with a gift. Several other members including, Commissioner Klee, John Harrity, and Matt Ranelli also thanked and recognized him. Commissioner Smith read a statement from the Governor thanking and honoring him for his service.

Mun Choi thanked the Board.

g. **EECLP Business Plan**

4. Strategic Retreat Overview

Bryan Garcia provided an update on the Strategic Retreat. He discussed building relationships with the utilities and that they would like to find a way to create a private entity for things that they are unable to achieve through the current programs. He also discussed operations issues and finding a way to deploy capital on hand to existing programs. He stated that there had been conversation around the new Trump Administration, as well as, leveraging a large national player, Bank of America, partnering with the Connecticut Green Bank. He also touched on the RSIP. He stated that they will come back to the Board in April on a number of items.

Mackey Dykes touched on the ESA. Kerry O'Neill discussed the ESA Model for HVAC equipment. She also discussed the Smart-E Program, stating that they could look to expand their terms to 15-20 years. She explained that they could also potentially offer more IRB.

Bryan Garcia touched on the Fuel Cell Industry, explaining that there are a number of projects on the table that they may be able to get into. He explained that the teams are looking at where they can put their capital to work.

Bryan Garcia discussed the new market side and what can be done in coordination with DEEP to support expansion into the Renewable Thermal Technologies and the Zero Emission Vehicles. He explained that they are working with DEEP and the Utilities for all parties to win.

John Harrity discussed charging stations and the fact that there are some large employers in the state that have environmental commitments. He stated that they should be prime targets.

Bryan Garcia stated that on the GC3 they have The Hartford. Commissioner Klee stated that they need to be cognizant of the timing of the various initiatives. Commissioner Smith stated that there is increasing concern about the costs coming out of Washington and that it might require some local participation that may have not been done before.

5. Committee Recommendations and Updates*

a. Budget and Operations Committee

i. Progress to Targets – Proposed Revisions*

Eric Shrago provided an update on the Progress to Targets and the proposed revisions.

Eric Shrago stated that after some discussion they have proposed to restate some of the Targets including S & I down to 6001, RESI down to 771, due to inactivity of the HES channel and longer lead times in multifamily projects. He also touched on CPACE requesting a revised target of 74 projects for the CI&I sector.

Commissioner Smith questioned how this compared to last year. Eric Shrago explained that last year they had completed 6100 projects and over 1000 loans in RESI, 44 in C & I, and a bit above in S & I.

Commissioner Klee questioned what the projects looked like that they facilitated (but led by other lenders), but did not complete and suggested that they do take some credit for those since they did facilitate them. Eric Shrago explained that they will take some credit for those.

Upon a motion made by Commissioner Klee and, seconded by Mun Choi Young the request was approved unanimously.

Resolution #4

ii. RESOLVED, the Connecticut Green Bank Board of Directors approves the fiscal year 2017 target adjustments as presented here today Budget Investments, Revenues, and Expenses – Proposed Revisions*

Eric Shrago discussed the budget adjustments. He stated that the Legislature had reallocated RGGI funds. He explained that there is an adjustment under interest income, as well as, due to delay of the SHREC sales. There are also downward revisions due to the new projected number of CPACE projects for the year. He explained that overall there is a downward adjustment of $3.5 million.

Eric explained that there are a handful of expense reallocations within the existing budget and discussed the approval from the Board for $400,000 to Energize CT stating that it had been a bill that they were made aware of a few months ago. He stated that they are legitimate expenses that they are just being billed for. George Bellas provided some clarification on the bill.

Upon a motion made by John Harrity and, seconded by Commissioner Klee, the request passed unanimously.

Resolution #5

6. RESOLVED, that the Connecticut Green Bank Board of Directors approves the fiscal year 2017 revisions and reallocations outlined in Attachment B. **Staff Transaction Recommendations and Updates***

a. **Commercial, Industrial, and Institutional Sector Program Transaction Recommendations and Updates**

i. Commercial and Industrial Solar PPA Fund and US Bank Recommendation*

Ben Healey discussed Solar Lease 3 solar PPA fund. He advised that they are moving forward and will ask for authorization to negotiate on some of the outstanding items.

Matt Ranelli asked if this will allow for early payment. Ben Healey stated that it is PPA's and there be the tax equity period of 5-6 years before the tax benefits have been utilized, following which the energy customer may purchase the system in accordance with the provisions of the power purchase agreement.

Upon a motion made by Commissioner Klee and, seconded by John Harrity the Resolution passed.

Resolution #6

WHEREAS, the Green Bank has successfully utilized all of the capacity of the CT Solar Lease 2 program ("Solar Lease 2"), which was authorized at a special meeting of the Board of Directors of the Connecticut Green Bank ("Green Bank") held on June 26, 2013;

WHEREAS, the Green Bank has received a draft term sheet from U.S. Bank to extend the success of Solar Lease 2 by investing approximately $9 million in tax equity financing into a new solar fund focused exclusively on commercial-scale systems ("Solar Lease 3"), in a manner materially consistent, absent debt financing at the project level, with the structure previously approved by the Board of Directors with respect to Solar Lease 2; and

WHEREAS, the Green Bank intends to create a new special purpose vehicle and fund structure for Solar Lease 3, utilizing U.S. Bank tax equity, as broadly set forth herein.

NOW, therefore be it:

RESOLVED, that the Green Bank Board of Directors ("Board") authorizes the President of the Green Bank and any other duly authorized officer of the Green Bank, to execute term sheets and negotiate and deliver definitive documentation to enable U.S. Bank tax equity capital and Green Bank sponsor equity to create together a Solar Lease 3 fund consistent with the memorandum submitted to the Board dated January 13, 2017, and as he or she shall deem to be in the interests of the Green Bank and the ratepayers no later than 120 days from the date of authorization by the Board;

RESOLVED, that the Green Bank may commit up to $15 million to Solar Lease 3 for term financing, in anticipation that Solar Lease 3 will be back-levered once its capacity has been fully utilized and the portfolio appropriately seasoned; and

RESOLVED, that the proper Green Bank officers are authorized and empowered to do all other acts and negotiate and deliver all other documents and instruments as they shall deem necessary and desirable to effect the above-mentioned legal instruments.

ii. Kresge Foundation Program Related Investment Recommendation* – Resiliency with Battery Storage

Anthony Clark discussed the Kresge Foundation. He stated that the initial approval had come from the Board back in November. He explained that it's a $3 million draw down over an 18-month period, with an interest rate of 2%, paid quarterly over 10 years. He explained that Kresge will give a matching grant of 5% of the PRI value. He explained that the Connecticut Green Bank will create a special purpose entity in order to receive the funding. He stated that they are looking for approval to take it on and to create the SBA.

Mun Choi questioned what the motivation was to approach the Kresge Foundation. Anthony Clark mentioned that they had met at a retreat that they had attended and that they had learned about several interesting models around the country. Commissioner Klee stated that this is a really critical space which is needed for their goals.

Upon a motion made by Commissioner Klee and, seconded by Mun Choi the request passed unanimously.

Resolution #7

WHEREAS, the Connecticut Green Bank ("Green Bank") is actively seeking to deploy private capital to support affordable, clean, and resilient energy to property owners;

WHEREAS, the Kresge Foundation ("Kresge") is a private foundation that funds arts and culture, environment, education, health, community development and human resources;

WHEREAS, pursuant to Connecticut General Statutes Section 16-245n, as amended from time to time, the Green Bank is authorized to accept both charitable gifts and loans from philanthropic foundations;

WHEREAS, the Green Bank drafted a proposal to Kresge dated June 30, 2016, which the latter has accepted, for a $3,000,000 Program Related Investment ("PRI") to support the deployment of clean energy systems that provide energy resilience and are installed at affordable housing and other buildings that might

act as hubs during major grid outage events in coastal and urban Connecticut; and

WHEREAS, Green Bank staff recommends that the Board authorize the creation of a Special Purpose Entity that will be wholly owned by the Green Bank to take on the Kresge PRI obligation.

NOW, therefore be it:

RESOLVED, that the President of the Green Bank and any other duly authorized officer of the Green Bank, is authorized to execute and accept the Kresge PRI, and in so doing obligate the Green Bank in a total amount not to exceed $3,000,000 with terms and conditions consistent with the memorandum and associated exhibits submitted to the Board of Directors dated January 13, 2017, and as he or she shall deem to be in the interests of the Green Bank and the ratepayers no later than 120 days from January 13, 2017;

RESOLVED, that the Green Bank may establish a wholly owned Special Purpose Entity with all the requisite powers to take on the Kresge PRI obligation as described in the memorandum to the Board of Directors dated January 13, 2017; and

RESOLVED, that the proper Green Bank officers are authorized and empowered to do all other acts and execute and deliver all other documents and instruments as they shall deem necessary and desirable to effect the above-mentioned legal instruments.

iii. **Small Business Energy Advantage in Partnership with the Eversource Energy and United Illuminating Update**

Anthony Clark provided an update on the SBEA. He stated that the Connecticut Green Bank had run an RFP last year and that they have settled on JP Morgan. He stated that they are proposing that the loan funding be from a facility that the Connecticut Green Bank would create. He advised that some of the capital would be private and some would be from the Connecticut Green Bank. He stated that they are trying to ensure that the CEEF budget that has already been allocated will flow through to the Connecticut Green Bank LLC, once they are the new capital source. He stated that if CEEF didn't have sufficient funds to cover in the future, there would be another mechanism needed to provide that support. He stated that they're working to come up with a strategy. He explained that they need to get the credit backstops in place to get the best capital rate.

Bert Hunter stated that the level of savings will be immense. He stated that the average rate between UI and Eversource is about 10%. He stated that this will drop it to inside of 3%.

John Harrity stated that they are unclear as to whether or not this has to go through PURA. Bert Hunter stated that yes, that all of the uses of CEEF money must go through PURA for approval.

Commissioner Smith questioned what the motivation is from the utility side. Bert Hunter explained that their Corporate Treasury will put no more funds into the program. He stated that the other reason is that the savings can be directed to other programs.

b. Residential Sector Program Transaction Recommendations

i. Smart-E Loan Program – Revisions

Kerry O'Neill discussed the Smart-E Program and a request to allow credit unions and community banks to offer the alternative underwriting terms for credit-challenged customers. She explained that this should help to decrease the program's customer decline rates.

Upon a motion made by Matt Ranelli and, seconded by Mun Choi, the request passed unanimously.

Resolution #8

WHEREAS, in July of 2011, the Connecticut General Assembly passed Public Act 11-80, "AN ACT CONCERNING THE ESTABLISHMENT OF THE DEPARTMENT OF ENERGY AND ENVIRONMENTAL PROTECTION AND PLANNING FOR CONNECTICUT'S ENERGY FUTURE," which created the Connecticut Green Bank (the "Green Bank") to develop programs to finance and otherwise support clean energy investment in residential projects per the definition of clean energy in CGS Section 16-245n(a);

WHEREAS, in February of 2013, the DEEP released the Comprehensive Energy Strategy ("CES") for Connecticut that includes developing financing programs that leverage private capital to make clean energy investments more affordable, including the pilot Smart-E Loan residential financing program and the development of an on bill repayment ("OBR") program for residential customers with a utility shutoff provision for failure to make loan repayments; and

WHEREAS, in May of 2013, Green Bank launched the Smart-E Loan program, statewide as of November 2013, with 9 credit unions and community banks providing low cost and long-term financing for measures that are consistent with the state energy policy and the implementation of the CES. The Smart-E Loan uses $4.3 million of credit enhancement, including both repurposed ARRA-SEP and Green Bank funds, to attract nearly $30 million of private investment from local financial institutions.

NOW, therefore be it:

RESOLVED, that the Green Bank Board of Directors (the "Board") approves of the request to allow for all current and future community banks, credit unions and community development financial institutions to utilize the Smart-E Loan Program's alternative underwriting option, consistent with the memorandum submitted to the Board dated October 9, 2015 and as modified by the memorandum submitted to the Board January 13, 2017.

ii. Multifamily Catalyst Fund Pilot Program – A Pathway to Promote More Clean Energy*

Kerry O'Neill discussed the Multi-Family Catalyst Fund Pilot Program. She provided a video for the Board to touch on some key points. She stated that projects that are not as easily underwritten through the traditional program at HDF will go through this new program, with most being very complex and technical challenges. She explained that this addresses the naturally occurring affordable multifamily market, and that they are asking for $1.5 million to address the issue. She explained that all of the loans will go through the standard underwriting criteria and guidelines. She explained that if a property is going to do Health and Safety financing they must do an energy assessment or audit and complete identified energy upgrades. She explained that the maximum for Health and Safety upgrades financed is 75% of the total project costs, and those costs could be up to 100% of the loan amount. Brian Farnen stated that this is consistent with the Enabling Statute because it must be directly related to a clean energy improvement and the new underwriting guidelines make that clear.

Kerry O'Neill shared some information that DEEP is in discussions to provide $1.5 million to be added into the program. Commissioner Klee advised that the monies are for the Health and Safety issues that have been so challenging. He advised that the money is coming from RGGI dollars.

Commissioner Smith asked for a bit more clarification because the level of 75% seems a bit high. Kerry O'Neill described the details and the scope of work. She advised that the 75% will be outliers. She stated that they don't expect to see a lot of those projects and that the program is a pilot from which the team is expected to learn how these funds deal with barriers to energy improvements.

John Harrity questioned if there was any other public agency that provides resources for the Health and Safety part. Kerry O'Neill stated that there are some properties under CHFA and the Department of Housing, but no others. Commissioner Smith requested that they try CHFA and the Department of Housing first. Kim Stevenson advised that every avenue is explored.

Upon a motion made by Commissioner Klee and, seconded by John Harrity, the request was approved unanimously.

Resolution #9

WHEREAS, the Connecticut Green Bank ("Green Bank") actively seeks to deploy private capital investment toward clean energy improvements in the state's multifamily housing which in some cases have preexisting health and safety issues that are preventing opportunities for clean energy improvements to be made;

WHEREAS, the definition of "clean energy" per the Green Bank's enabling statute set forth at C.G.S. 16-45n includes renewable energy technologies as well as "financing of energy efficiency projects," but does not include health and safety;

WHEREAS, the Green Bank's enabling statute provides that the Green Bank may make "expenditures that promote investment in clean energy in accordance with a comprehensive plan developed by it to foster the growth, development, and commercialization of clean energy sources," and that "such expenditures may include, but not be limited to…the implementation of the plan developed pursuant to … this section";

WHEREAS, the Green Bank Comprehensive Plan approved by the Board of Directors on July 22, 2016 provides guidance on mitigating health and safety issues that act as barriers to realizing clean energy investments opportunities to make in its executive summary, goals, evaluation framework, and residential sector sections; the Comprehensive Plan also notes that the goals of the Green Bank are to support the implementation of Connecticut's clean energy policies be they statutory (i.e., PA 15-194), planning (i.e., Comprehensive Energy Strategy, Integrated Resources Plan), or regulatory in nature;

WHEREAS, the 2013 Comprehensive Energy Strategy for Connecticut released by the Connecticut Department of Energy and Environmental Protection recognizes that health and safety issues are a barrier to clean energy improvements;

WHEREAS, Green Bank staff has developed guidelines for how the Green Bank shall make loan investments to remove health and safety barriers to realize clean energy improvements at multifamily properties consistent with the Green Bank's enabling statute;

WHEREAS, the Green Bank Board of Directors (the "Board") has previously approved a Program Related Investment ("PRI") in the amount of $5,000,000 from the John D. and Catherine T. MacArthur Foundation ("MacArthur") to support the Green Bank's efforts to accelerate energy efficiency and clean energy upgrades in multifamily properties across the state of Connecticut as outlined in the proposal presented by the Green Bank to MacArthur;

WHEREAS, MacArthur later selected the Housing Development Fund ("HDF") to receive and administer the MacArthur PRI;

WHEREAS, Green Bank staff is now requesting a reallocation of $1,500,000 from the Statutory and Infrastructure Sector ($1,000,000 from Anaerobic Digester Projects and $500,000 from Micro Grids) to support a pilot program providing term financing for energy and related health and safety improvements ("Pilot Program").

NOW, therefore be it:

RESOLVED, that the Board authorizes additional funding from the Green Bank's balance sheet through a reallocation from the Statutory and Infrastructure Sector, in an amount not to exceed $1,500,000, for the Pilot Program with terms and conditions consistent with the guidelines and memorandum dated January 13, 2017 and associated exhibits submitted to the Board; and

RESOLVED, that the proper Green Bank officers are authorized and empowered to do all other acts and execute and deliver all other documents and instruments as they shall deem necessary and desirable to affect the above-mentioned legal instruments.

c. Investment Division Transaction Recommendations

i. Bank of America – Strategic Opportunity*

Ben Healey provided and overview of the strategic opportunity with Bank of America. He explained that it is a 10-year loan with a 2 year draw period. He explained that the details are still being discussed. He stated that the staff is recommending that they move forward in finalizing the term sheet, which is still being negotiated. He advised that they will not have cash that is just sitting on their balance sheet. He advised that it will be used for specific programs.

Brian Farnen advised that there is no prepayment penalty or commitment fee and this resolution is a strategic selection based on the rationale set forth in the memorandum.

Commissioner Smith questioned with the principal being due in the last few years that if they put it against specific programs, will that be a risk to not be able to pay it back. Ben Healey advised that it's designed to be more favorable and to give more flexibility, but they do have to be thoughtful of the structuring of the funds.

Commissioner Smith questioned if the 10 years starts when the funds are drawn. Ben Healey stated that that part is unclear, but he thinks that it's when they close the deal. He stated that they are still negotiating.

Bert Hunter stated that they can use it for a project extension for the SBEA. He stated that the facility can be used for any future program with the approval of Bank of America.

Upon a motion made by John Harrity and, seconded by Commissioner Klee, the request was approved unanimously.

Resolution #10

WHEREAS, the Connecticut Green Bank ("Green Bank") actively seeks to deploy private capital to support clean energy upgrades and generation;

WHEREAS, Bank of America ("BofA") has proposed to loan $10,000,000 (the "BoA Funds") to the Green Bank to support the Green Bank's efforts to accelerate energy efficiency and clean energy generation across Connecticut; and

WHEREAS, the proposed loan qualifies as a strategic selection and award pursuant to Green Bank Operating Procedures Section XII due to BofA's uniquely attractive offer to lend to the Green Bank, and the strategic nature of being the first green bank to source low-cost, long-term private capital based on its balance sheet.

NOW, therefore be it:

RESOLVED, that the President of the Green Bank and any other duly authorized officer of the Green Bank, is authorized to execute and accept the BofA Funds, and in so doing obligate the Green Bank in a total amount not to exceed $10,000,000 with terms and conditions consistent with the memorandum submitted to the Board of Directors dated January 13, 2017, and as he or she shall deem to be in the interests of the Green Bank and the ratepayers no later than 120 days from January 13, 2017; and

RESOLVED, that the proper Green Bank officers are authorized and empowered to do all other acts and execute and deliver all other documents and instruments as they shall deem necessary and desirable to effect the above-mentioned legal instruments.

7. **Other Business**

There was no other business.

8. Adjourn

Upon a motion made by John Harrity and, seconded by Commissioner Klee, the Board voted unanimously to adjourn the meeting at 10:34 a.m.

Respectfully Submitted,

_____

Catherine Smith, Chairperson

845 Brook Street, Rocky Hill, CT 06067
T 860.563.0015
ctgreenbank.com

CONNECTICUT GREEN BANK

Memo

To: Connecticut Green Bank Board of Directors

From: Kerry O'Neill, Vice President, Residential Programs

CC: Bryan Garcia, President and CEO; Bert Hunter, EVP and CIO; Brian Farnen, General Counsel and CLO; Eric Shrago, Director of Operations; George Bellas, VP Finance and Administration

Date: March 3, 2017

Re: ARRA-SEP Update and Proposal to Reallocate Funds to Smart-E Loan Program

---

Purpose

The purpose of this memorandum is to request approval from the Connecticut Green Bank ("Green Bank") Board of Directors to support the Deployment Committee's recommendation on February 28, 2017 to reallocate American Recovery and Reinvestment Act State Energy Program ("ARRA-SEP") funds out of Loan Loss Reserves ("LLR") in several residential products and into Smart-E Interest Rate Buydowns ("IRB"). The ARRA-SEP LLRs would be replaced with Green Bank funds. The goals of reallocating ARRA funds into IRBs is to expend these funds more quickly while catalyzing new markets to support the Governor's Climate Change Council's efforts to reduce GHG emissions. Given the excellent portfolio performance we've seen to date – there have been no draws on loss reserves as of yet.

Background:

The Deployment Committee and the Board of Directors have previously approved $8,361,620 of ARRA-SEP funds to be used as credit enhancements allocated across five residential programs: Cozy Home Loan, CT Solar Loan, CT Solar Lease, Smart-E Loan, and Capital for Change ("C4C") Low Income Multifamily Energy ("LIME") Loan programs[1]. The current not-to-exceed allocations by product are:

Product	Not-to-Exceed ARRA-SEP Amount	Loan Loss Reserve Allocation	IRB Allocation	IRB Expended
Cozy Home Loan	$28,793	$17,193	$11,600	$11,600

[1] Approvals from FY 2012; FY2013; October 18, 2013; adjustments as part of budget approvals in FY 2015, FY 2016 and FY 2017.

Smart-E Loan	$3,422,584	$1,110,608	$2,311,976	$1,007,893[2]
Solar Loan	$468,600	$300,000	$168,600	$168,600
Solar Lease	$3,816,643	$3,500,000	$316,643	$0
C4C LIME Loan	$625,000	$625,000	$0	$0
Total	**$8,361,620**	**$5,552,801**	**$2,808,819**	**$1,188,093**

Request:
Staff proposes to:

- Replace the Smart-E LLR with Green Bank funds and use the ARRA funds for Smart-E IRBs;
- Replace the CT Solar Lease LLR with Green Bank funds and reallocate all CT Solar Lease ARRA funds to Smart-E IRBs; and
- Replace a portion of LIME loss reserve ($325,000 that is approved but not yet committed) with Green Bank funds and reallocate those funds to Smart-E IRBs.

Staff will be pursuing more aggressive IRB special offers in support of the upcoming Comprehensive Energy Strategy and the Governor's Council on Climate Change that references the need for electrification of heating and cooling, deployment of renewable heating and cooling, and promotion of zero emission vehicles (where we can use ARRA funds for IRBs for EV rechargers attached to residential homes). Along with the Smart-E Loan, through the Residential Solar Investment Program (RSIP), staff is also partnering with the utilities on near-net zero home energy retrofits.

The resulting **ARRA-SEP** allocations by product and use of Green Bank funds, if approved, will be:

Programs	Not-to-Exceed ARRA-SEP Amount	ARRA-SEP Loan Loss Reserve Allocation	ARRA-SEP IRB Allocation	Green Bank LLR Funds Required
Cozy Home Loan	$28,793	$17,193	$11,600	$0
Smart-E Loan	$7,564,227	$0	$7,564,227	$1,110,608
Solar Loan	$468,600	$300,000	$168,600	
Solar Lease				$3,500,000
C4C LIME Loan	$300,000	$300,000	$0	$325,000
Total	**$8,361,620**	**$617,193**	**$7,744,427**	**$4,935,608**

[2] As of 12/1/2016.

Accordingly, staff seeks approval to use **$4,935,608 of non-ARRA Green Bank funds for loan loss reserves** in the following amount by product (as shown in the chart above):

- $1,110,608 for Smart-E (in addition to the already approved $759,276 in the FY17 budget for a total of $1,869,884)
- $3,500,000 for CT Solar Lease
- $325,000 for LIME Loan

Financial Statements

How is the project investment accounted for on the balance sheet and profit and loss statements?

The proposed allocation of $4,935,608 in ratepayer monies to fund loan loss reserves for these programs in conjunction with the modification of existing legal agreements between Green Bank and external program partners to reflect the substitution of ratepayer monies for ARRA monies will allow Green Bank to classify these monies out of the "unrestricted" cash category of its balance sheet to the "restricted" cash category. ARRA monies will continue to be classified as restricted cash due to the constraints placed on their use by the federal government.

This accounting treatment is supported by GASB 34 which allows for the classification of assets and net position as restricted when constraints are placed on their use in the following instances:

- "Externally imposed by creditors (such as through debt covenants), grantors, contributors, or laws or regulations of other governments."
- "Imposed by law through constitutional provisions or enabling legislation."

"The basic concept is that restrictions are not unilaterally established by the reporting government itself and cannot be removed without the consent of those imposing restrictions or formal due process."

Source: GASB Implementation Guide No. 2015-1, Section 7.24.1

Should a future determination be made that certain loans supported by these loan loss reserves are uncollectable, Green Bank will reimburse the financial institution originating the loan based on program guidelines. The restricted cash balance will be reduced by the amount of the reimbursement and the expense of such reimbursement will be recorded in the Green Bank's statement of revenues and expenses.

Resolution

WHEREAS, in July of 2011, the Connecticut General Assembly passed Public Act 11-80, "AN ACT CONCERNING THE ESTABLISHMENT OF THE DEPARTMENT OF ENERGY AND ENVIRONMENTAL PROTECTION AND PLANNING FOR CONNECTICUT'S ENERGY FUTURE," which created the Connecticut Green Bank (the "Green Bank") to

develop programs to finance and otherwise support clean energy investment in residential projects per the definition of clean energy in CGS Section 16-245n(a);

WHEREAS, in February of 2013, the DEEP released the Comprehensive Energy Strategy ("CES") for Connecticut that includes developing financing programs that leverage private capital to make clean energy investments more affordable, including the pilot Smart-E Loan residential financing program;

WHEREAS, the Governor's Council on Climate Change has identified the need to support renewable heating and cooling and electric vehicles to support the implementation of the Global Warming Solutions Act goal of reducing 80 percent of greenhouse gas emissions from a baseline year of 2001 by the year 2050;

WHEREAS, in May of 2013, Green Bank launched the Smart-E Loan program, currently operating statewide, with 10 credit unions and community banks and one community development financial institution providing low cost and long-term financing for measures that are consistent with the state energy policy and the implementation of the CES. The Smart-E Loan currently includes $4.3 million of credit enhancement, including both repurposed ARRA-SEP and Green Bank funds, to attract nearly $30 million of private investment from local financial institutions;

WHEREAS, the Deployment Committee recommended on February 27, 2017 that the Board of Directors approve the proposed relocation of ARRA-SEP funds in amounts materially consistent with the Memorandum presented to the Committee dated February 21, 2017.

NOW, therefore be it:

RESOLVED, that the Green Bank Board of Directors (the "Board") approves funding for loan loss reserves and interest rate buydowns ("Credit Enhancements") through the use of repurposed American Recovery and Reinvestment Act State Energy Program ("ARRA-SEP") program funds be approved for Green Bank's Cozy Home Loans, Smart-E Loans, CT Solar Loan, and LIME Loan programs (the "Programs") in amounts materially consistent with the Memorandum presented to the Board dated March 3, 2017.

RESOLVED, that the Board approves ARRA-SEP funds for the Programs in the not-to-exceed set forth below and that the President of the Green Bank; and any other duly authorized officer of the Green Bank, is authorized to use their best discretion to utilize the most effective use of the entirety of the ARRA-SEP Credit Enhancements in amounts not to exceed:

a. $28,793 for Cozy Home Loans;
b. $7,564,227 for Smart-E Loans;
c. $468,600 for CT Solar Loan; and

d. $300,000 for LIME Loan.

RESOLVED, that the Board approves Green Bank funds for Loan Loss Reserves for the Smart-E Loan Program in the not-to-exceed amount of $1,869,884 including $1,110,608 of additional funds and $759,276 of already approved FY17 budgeted funds.

RESOLVED, that the Board approves Green Bank funds for Loan Loss Reserves for the CT Solar Lease Program in the not-to-exceed amount of $3,500,000.

RESOLVED, that the Board approves Green Bank funds for Loan Loss Reserves for the LIME Loan Program in the not-to-exceed amount of $325,000.

St. Joseph's Parish: A C-PACE Project in Brookfield, CT

Address	5 Obtuse Hill, Brookfield, CT 06804			
Owner	St. Joseph's Church			
Proposed Assessment	$449,519.00			
Term (*years*)	20			
Term Remaining (*months*)	Pending construction completion			
Annual Interest Rate	5.75%			
Annual C-PACE Assessment	$38,361.00			
Savings-to-Investment Ratio	1.07			
Average DSCR	[redacted]			
Lien-to-Value	[redacted]			
Loan-to-Value	[redacted]			
Projected Energy Savings (mmBTU)		EE	RE	Total
	Per year	999		999
	Over term	19,982		19,982
Estimated Cost Savings (incl. ZRECs and tax benefits)	Per year	$35,997.60		$35,997.60
	Over term	$719,952.00		$719,952.00
Objective Function	44.5 kBTU / ratepayer dollar at risk			
Location	Brookfield			
Type of Building	Non-profit			
Year of Build	Varies			
Building Size (*sf*)	29,000			
Year Acquired by Owner	1892			
Municipal Appraised Value	[redacted]			
Mortgage Lender Consent	[redacted]			
Proposed Project Description	lighting, controls, solar, EE			
Est. Date of Construction Completion	Pending closing			
Current Status	Awaiting Deployment Committee Approval			
Energy Contractor	[redacted]			
Notes				

CONNECTICUT GREEN BANK

845 Brook Street
Rocky Hill, Connecticut 06067

300 Main Street, 4th Floor
Stamford, Connecticut 06901

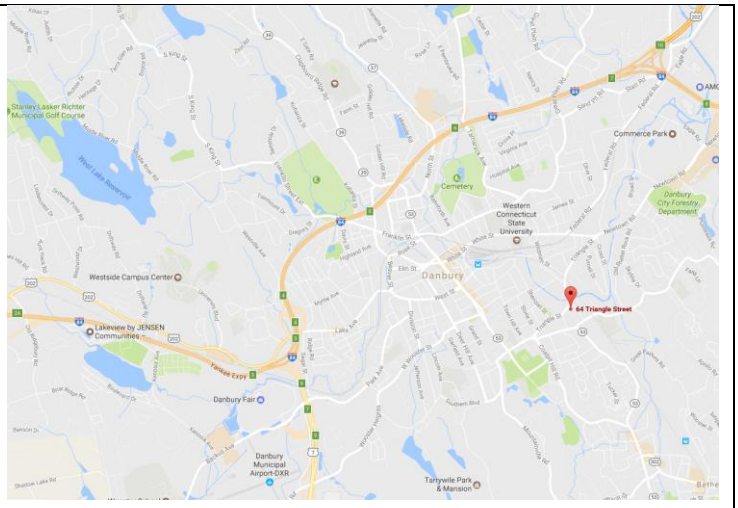
T: 860.563.0015
F: 860.563.4877
www.ctcleanenergy.com

Danbury Fuel Cell Project

A Fuel Cell Debt Financing Program

Due Diligence Package

March 10, 2017



Document Purpose: This document contains background information and due diligence on a proposed credit facility for the FuelCell Energy, Inc. (NASDAQ: FCEL) fuel cell project located at 64 Triangle Street, Danbury, CT 06810. The information herein is provided to the Connecticut Green Bank Board of Directors for the purposes of reviewing and approving recommendations made by the staff of the Connecticut Green Bank.

In some cases, this package may contain, among other things, trade secrets and commercial or financial information given to the Connecticut Green Bank in confidence and should be excluded under C.G.S. §1-210(b) and §16-245n(D) from any public disclosure under the Connecticut Freedom of Information Act. If such information is included in this package, it will be noted as confidential.

Program Qualification Memo

To: Connecticut Green Bank Board of Directors

From: Chris Magalhaes, Assistant Director, Clean Energy Finance; Ben Healey, Director, Clean Energy Finance; Bert Hunter, EVP & CIO

Cc: Bryan Garcia, President & CEO; Brian Farnen, General Counsel & CLO; Dale Hedman, Managing Director, Statutory & Infrastructure Programs

Date: March 10, 2017

Re: Danbury Fuel Cell Project – Debt Financing

Purpose

The purpose of this memo is to request approval from the Connecticut Green Bank ("Green Bank") Board of Directors (the "Board") for a $5,000,000 Senior Secured Credit Facility (the "Credit Facility"), in the form of a senior term loan, for the proposed 3.7 megawatt FuelCell Energy, Inc. ("FCE") fuel cell project located at 64 Triangle Street, Danbury, CT 06810 (the "Project").

In requesting approval for the Credit Facility, it is the goal of Green Bank staff to highlight, for the benefit of the Green Bank Board, the following considerations:

1.) The risks inherent in undertaking the Credit Facility, and the impact on the Green Bank should any of those risks materialize.

2.) The mitigants to be put in place, and recourse(s) to be taken, that will serve to contain and/or minimize the investment-related risks associated with the Credit Facility.

3.) The strategic importance of the Project to FCE, as well as the importance of FCE to the state as one of two major manufacturers of fuel cells in Connecticut.

4.) The societal and environmental benefits achieved by this proposed Project, specifically, manufacturing, supply chain and construction jobs, sales and property taxes, and significant CO_2 offset for the grid.

Credit Facility

Summary Terms and Conditions

The proposed Credit Facility constitutes a $5,000,000 senior secured term loan with an interest rate of [redacted]% (P.A.) that is fully amortized over a 20-year term. The Credit Facility will be advanced upon the Project's Commercial Operation Date ("COD") for the purpose of providing long-term financing to the Project, and will be supported by an unconditional payment and performance guaranty from FCE. In addition to the corporate guaranty, Green Bank's investment will be secured by (i.) all Project assets, (ii.) all Project cash flows (both contracted and merchant), and (iii.) a cash reserve account (as described more fully in the **Project Risk and Mitigants** section of this Memo).

Project cash flows, at least initially, will consist of (a.) electric power sales monetized at unsubsidized wholesale rates, (b.) Class I Renewable Energy Credit ("REC") sales[1], and (c.) capacity and/or ancillary service sales monetized via the ISO New England forward capacity market. While there are plans to secure short-to-medium term contracts for some of these cash flows (as described in the **Project Risk and Mitigants** section of this Memo), because there is no assurance of long-term, revenue-generating contracts in place for any of the value streams associated with the Project for the entire life of the credit facility (i.e., a "merchant" project), project cash flows are exposed to the variability of both energy production and spot market pricing to the extent not covered by these shorter term arrangements. Therefore, the risk profile faced by Green Bank in lending to the Project reflects a level of exposure that is new to Green Bank.

Staff has spent considerable time and diligence a.) understanding the implications of the Project's non-contracted risk exposure, among the balance of other Project risks, and b.) identifying structures, conditions, and mitigants to shield, to the extent possible, adverse effects to the Green Bank. The Project's major risks, and counterbalancing mitigants, are described in detail in the **Project Risk and Mitigants** section of this Memo.

Use of Proceeds – High Efficiency Fuel Cell Project

The Credit Facility will help finance the inaugural launch, at scale, of the latest configuration of FCE's Direct FuelCell ("DFC") fuel cell technology, which will be the most efficient fuel cell ever installed by FCE. The Project will utilize in-state developed, designed, and manufactured technology to create a new benchmark of product efficiency across the fuel cell industry, converting natural gas into electricity at a high fuel-to-electricity ratio while also reducing pollution by up to 99.99% in comparison to conventional power generating plants. The innovative technology achieves additional electrical output through a proprietary design developed by FCE, which has extensive experience deploying innovative fuel cell projects. For example, In December 2013, as the Board will recall, FCE commissioned a 14.9 MW, Dominion-owned fuel cell project in Bridgeport, Connecticut (the "Bridgeport Project"), which remains the largest standalone fuel cell in the United States.

The Project will underpin the productive transformation of a 10,000 square foot equipment yard on an industrial site at 64 Triangle Street in Danbury into a facility that will (i.) produce clean, reliable power for the grid, (ii.) create and/or retain up to 30 direct and indirect local jobs, (iii.) provide approximately $700,000 to $850,000 of sales tax revenue to the State in 2017, and (iv.) provide up to $1,000,000 in property tax payments to the City of Danbury over the course of the Project's life. Located within 3 miles of FCE corporate headquarters, the 3.7 MW fuel cell facility will be constructed, operated, and maintained directly by FCE. The Project has been designed for unattended operation with both local and remote dispatch control, and maintenance repairs and upgrades can be undertaken without taking the plant offline. Scheduled maintenance and restacking events will optimize system performance over the course of its useful life.

The latest configuration of FCE's DFC fuel cell technology represents a product innovation that delivers greater production efficiency, and thus more power, resulting in a better value proposition for customers and lower production costs for FCE. As such, the Project will form the foundation of FCE's long-term growth strategy.

FCE, which as per the U.S. Department of Energy ("DOE") Fuel Cell Technologies Market Report 2015, had the highest Gross Revenue, R&D Expenditure, Total Assets, and Net Assets (Assets minus Liabilities) of global publicly-traded fuel cell companies listed[2], serves as an indicator of the fuel cell industry and has both its headquarters (Danbury) and a production facility (Torrington) in Connecticut. FCE, in particular, and the fuel cell industry in the broader context, has experienced adverse shocks to its business in Connecticut relative to other renewable energy technologies, due to a.) the expiration of the federal

[1] Since this is a "grid connected" project (i.e., not "behind the meter") it is not eligible for an LREC contract
[2] U.S. Department of Energy, "Fuel Cell Technologies Market Report 2015," https://energy.gov/sites/prod/files/2016/10/f33/fcto_2015_market_report.pdf, (February 26, 2017).

Business Investment Tax Credit ("ITC") on December 31, 2016, b.) having to incur sales tax for product servicing and installation (which is not the case for other renewable technologies in the state), and c.) not being selected for State-procured long-term Power Purchase Agreements ("PPAs") for certain strategic projects.

The net result has been increased capital, financing, and operating costs that have combined to constrict FCE's growth potential and limit the ability of fuel cells to contribute to Connecticut's economic development, job creation and retention, and clean energy deployment. Despite these setbacks, however, by investing in strategic FCE assets such as the inaugural rollout of FCE's high-efficiency DFC fuel technology, Green Bank staff believes that it can help FCE, and the broader industry, overcome short-term challenges and implement long-term strategy shifts by demonstrating a compelling, market-based value proposition relative to competing clean energy technologies, and by catalyzing a transition from subsidy-based to financing-based development models.

Strategic Selection and Importance

Connecticut Impact

Support for the Connecticut CES

Fuel cells, as an electrical power generating technology, convert hydrogen fuel sources (e.g. natural gas) into electricity via a chemical process without the combustion cycle typically found in traditional generation technologies, and thus without the associated pollution[3]. Fuel cells are defined as a Class I renewable energy source as per CGS §16-1(a)(20), and operate at an effective annual capacity factor of [redacted]%[4], providing clean, consistent, and reliable power to associated off-takers, whether grid-tied or behind-the-meter. In aggregate, the fuel cell industry is of strategic importance to Connecticut as it relates to economic development, job creation and retention, and clean energy deployment

Green Bank staff believes that by financing strategic fuel cell assets in Connecticut, such as the Project, Green Bank can help promote the foundation for a viable transition from subsidizing to financing models for a key clean energy technology that promotes environmental, energy, and economic benefits for the state.

Grid Stability & Support

From a power generation perspective, fuel cells benefit the existing electric distribution system as distributed baseload plants that stabilize loads (versus intermittent renewable energy technologies such as solar and wind), provide voltage support, and mitigate system upgrade requirements[5], resulting in enhanced system stability and cost-savings.

Benefits to the RPS and Environmental Benefits

From a clean energy power generation perspective, fuel cells provide Connecticut with a viable means of achieving its current Renewable Portfolio Standard ("RPS") policy of 20% of energy generation from Class I renewable energy sources by 2020[6], and provide potential off-takers with clean and reliable power that can be used in standalone and aggregated (e.g. microgrid)

---

[3] FuelCell Energy, "How a Fuel Cell Works," http://www.fuelcellenergy.com/?page_id=15806, (February 26, 2017).
[4]Connecticut Green Bank, *Pro Forma Model Projections (as supplied by FuelCell Energy)*, (February 1, 2017).
[5]Connecticut Department of Energy & Environmental Protection, "Testimony Submitted by DEEP Commissioner Robert J. Klee, and Katie Dykes, Chair, Public Utility Regulatory Authority," *Public Hearing – February 21, 2017 – Energy and Technology Committee*, https://www.cga.ct.gov/2017/ETdata/Tmy/2017HB-07036-R000221-Klee,%20Robert,%20Commissioner-DEEP-TMY.PDF, (February 26, 2017).
[6]Connecticut Department of Energy & Environmental Protection – Public Utilities Regulatory Authority, "Connecticut Renewable Portfolio Standard," http://www.ct.gov/pura/cwp/view.asp?a=3354&q=415186, (February 26, 2017).

applications. In fact, more recently, fuel cells have enabled Connecticut to meet its Class I RPS with more in-state deployment of clean renewable energy as opposed to out-of-state generation.

Looking at the Project from its pollution reduction potential, accordingly to an EPA report published on February 27, 2017, the average non-baseload output emissions rate across the New England eGRID subregion is 1,066 lbs of CO_2 per MWh of power produced[7]. In contrast, the technology underpinning the Project has a CO_2 emissions rate ranging between 520 – 680 lbs per MWh. Comparing the midpoint of the Project's emissions rate with the average regional non-baseload production rate, the Project saves, on average, 466 lbs of CO_2 per MWh of power produced. The Project is expected to produce 29,331 MWh of electricity during its first year of operation, offsetting 13,668,274 lbs of CO_2, or the equivalent of 6,834 tons of CO_2 in that first year of operation. Across the 20-year financing term, the Project is expected to produce up to 556,187 MWh of electricity, offsetting approximately 129,592 tons of CO_2. Comparing the project's CO_2 reduction capacity with the performance of other Green Bank projects in meeting pollution reduction goals, during its 2016 Fiscal Year Green Bank approved, closed, or completed a total of 8,271 clean energy projects which, in aggregate, will offset 885,103 tons of lifetime CO_2 emissions. The proposed Project, by offsetting 129,502 tons of CO_2, would by itself account for approximately 14.6% of expected CO_2 emissions reductions from all Green Bank financing and development activities in its 2016 Fiscal Year.

Economic Impact

From an economic perspective, Connecticut is home to over 600 companies that take part in the fuel cell industry supply chain, which account for over 2,600 direct and indirect jobs[8], and which in 2015 contributed $726 million in total revenue and investment and roughly $40 million in state and local tax revenue[9], which is a material portion of commercial tax revenues for the state. In December 2016, FCE was forced to cut 96 jobs, approximately 17% of its workforce, to reduce costs and support operating performance in the wake of adverse industry shocks. Support of the Project will directly lead to not only the creation and retention of jobs associated with the Project, but also to FCE's ability to ultimately bring back this workforce as other projects come on line and as it implements its long-term growth strategy.

Green Bank Strategic Alignment

With the goal of creating a viable market for the transition from subsidy-based to financing-based models of development for fuel cells in Connecticut, financing the Project is also of strategic importance to Green Bank, as the Project exhibits the following criteria, which are required of all Green Bank strategic selection and award investments:

- **Special Capabilities –** FCE has significant experience in manufacturing and developing fuel cells, and is a locally-domiciled market leader in the industry. FCE can spearhead the pivot away from tax incentives and state procurement subsidies via cost reductions derived from technological innovation and market penetration.

[7]United States Environmental Protection Agency, "eGRID2014v2 Summary Tables," https://www.epa.gov/sites/production/files/2017-02/documents/egrid2014_summarytables_v2.pdf, (March 4, 2017).

[8]Department of Economic and Community Development, "Testimony Before the Energy and Technology Committee 2/21/17 – RE: HB7036: An Act of Promoting the Use of Fuel Cells for Electric Distribution System Benefits and Reliability," *Public Hearing – February 21, 2017 – Energy and Technology Committee*, https://www.cga.ct.gov/2017/ETdata/Tmy/2017HB-07036-R000221-Smith,%20Catherine,%20Commissioner-Department%20of%20Economic%20and%20Community%20Development-TMY.PDF, (February 26, 2017).

[9]Connecticut Center for Advanced Technology, Inc., "Testimony of Joel M. Rinebold, Director of Energy Initiatives, Connecticut Center for Advanced Technology, Inc., Before the Energy and Technology Committee February 21, 2017, Regarding Governor's Bill No. 7036 – An Act Promoting the Use of Fuel Cells for Electric Distribution System Benefits and Reliability," *Public Hearing – February 21, 2017 – Energy and Technology Committee*, https://www.cga.ct.gov/2017/ETdata/Tmy/2017HB-07036-R000221-Rinebold,%20Joel,%20Director%20of%20Energy%20Initiatives-CT%20Center%20for%20Advanced%20Technology-TMY.PDF, (February 26, 2017).

- **Uniqueness –** The Project is the inaugural installation, at scale, of the newly innovated high efficiency fuel cell technology that FCE will use as the basis for future deployment. The Project has already been sited and is under construction, and is backed by approximately $[redacted] of developmental capital sourced by FCE.

- **Strategic Importance –** The Project is aligned with Green Bank goals, including the creation and retention of local jobs associated with FCE, the deployment of an innovative technology that will play an integral role in the economic transformation of the fuel cell industry, and the development of a clean energy generating asset that, both on an individual basis and as similar projects are deployed at scale, will continue to provide a combination of cleaner, cheaper, and more reliable energy, while creating jobs and supporting local economic development.

- **Urgency and Timeliness –** There is an urgent need to act on the opportunity as the adverse shocks experienced by the fuel cell industry in Connecticut in the form of a.) the ITC expiration, b.) the burden of sales tax obligations for product servicing and installation not borne by other renewable technologies, and c.) not being selected for state-procured long-term PPAs have led to increased capital, financing, and operating costs for FCE, constraining the firm's ability to achieve sustained, long-term growth.

- **Multiphase Project –** Successful execution of the Credit Facility will set the stage for the Green Bank to support the development of similarly strategic projects both for FCE and for the greater fuel cell industry within Connecticut.

Project Risk and Mitigants

The Project faces considerable risks that Green Bank staff has sought to identify, comprehend, and mitigate. And whereas the Board has experience evaluating the risk profile of fuel cell projects, term loans, and significant capital expenditures as independent exercises, the combination of these factors in the consideration of the proposed Credit Facility presents an aggregate risk profile of a magnitude that warrants considerable attention and diligence.

Staff has worked to appropriately understand, and account for, the risks associated with the Project, and recommends the authorization of the Credit Facility on the basis that Project risks have been reasonably mitigated, and that the strategic importance of the Project, to both the state and Green Bank, warrant the investment:

Manufacturer Risk

A. Overview

The Green Bank loan to the Project will benefit from an unconditional payment and performance guaranty from FCE. As such, the Green Bank needs to be comfortable with FCE's financial condition and prospects for continuing as a going concern. After extensive review of FCE's financial condition and interviews with its management, including its CEO and CFO, staff is comfortable that, notwithstanding recent setbacks in the New England Clean Energy RFP and the Connecticut 2-20MW RFP, FCE has both a credible and reasonable path to sustainable operations, which suggest that the Green Bank can have reasonable assurance that FCE can stand behind its obligations under both the outstanding Bridgeport loan and the proposed Credit Facility. In fact, given the security of the financing and collateral structures that staff is recommending for approval herein, staff is considering the recommendation of an additional FCE project for a follow-up round of project financing (to be submitted for approval by the Board at a later date).

B. Business Summary

FCE is engaged in designing, manufacturing, installing, operating and maintaining fuel cell power solutions. FCE also provides turnkey power generation solutions to the customers, including power plant installation, operations and maintenance. FCE offers its services to various sectors, including utility companies, municipalities, universities, government entities and a range of industrial and commercial enterprises. FCE, by utilizing its DFC plants, is commercializing a tri-generation distributed hydrogen configuration that generates electricity, heat and hydrogen for industrial and/or transportation uses, as well as a fuel cell carbon capture solution for coal or gas-fired power plants.

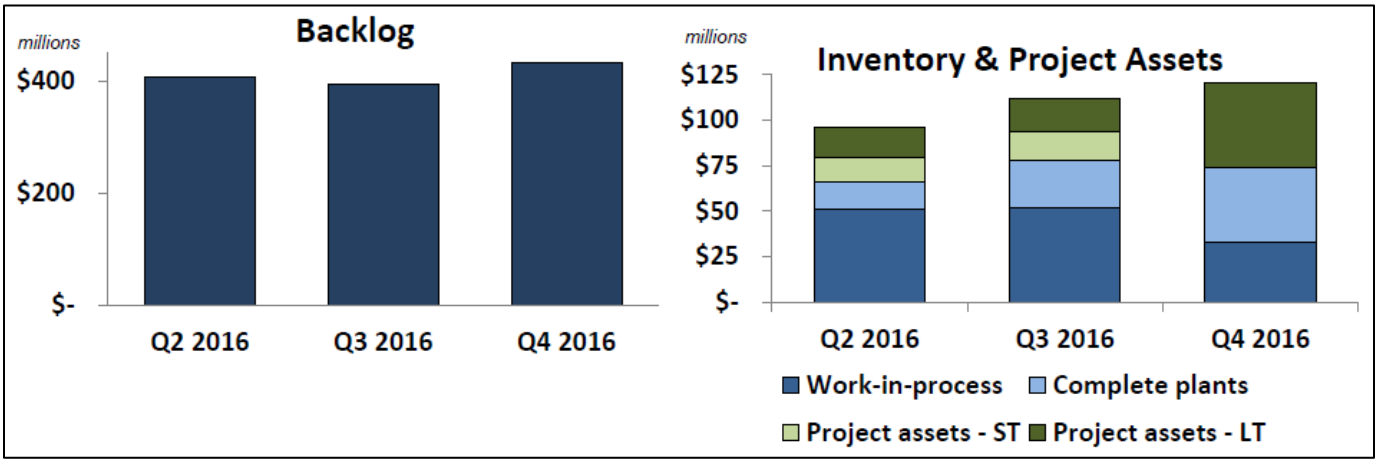
C. Financial Condition

As summarized below in condensed form (see **Appendix II** for more detailed financial statement information), FCE's financial position reflects its strategic transition to selectively retaining projects on balance sheet, thereby generating stable, recurring cash flows, via energy sales, that will help support the company's long-term growth and cost reduction strategies – as is the concept behind the proposed Project in Danbury – and lower sales to POSCO energy (fuel cell that had previously been manufactured and sold by FCE to POSCO are now manufactured by POSCO locally in Korea under a manufacturing license and royalty agreement with FCE).

Income Statement, Cash Flow and Balance Sheet Data (Millions USD, except per share) Fiscal Year Ending: Oct. 31 .

	2010	2011	2012	2013	2014	2015	2016
Revenue	70	123	121	188	180	163	108
Operating Income	-54.4	-45.7	-32.1	-29.8	-27.3	-28.9	-46.4
Net Income	-55.7	-45.7	-35.5	-34.4	-38.1	-29.4	-51.0
Operating Cash Flow	-35.0	-8.5	-58.7	-16.7	-57.5	-44.3	-46.6
Capital Expenditures	2.48	3.35	4.45	6.55	7.08	6.93	41.45
Earnings Per Share	-7.56	-5.64	-2.81	-2.42	-2.02	-1.33	-1.82
Dividends Per Share	Nil	Nil	Nil	Nil	Nil	Nil	Nil
Dividend Payout Ratio	Nil	Nil	Nil	Nil	Nil	Nil	Nil
Free Cash Flow Per Share	-5.26	-2.61	-5.13	-1.78	-3.36	-2.26	-3.10
Cash and Short Term Investments	45.5	63.4	46.9	67.7	83.7	58.9	84.2
Long Term Debt	3.7	16.5	16.5	57.2	22.5	21.0	90.3
Total Debt	4.7	25.4	22.7	65.2	24.9	29.2	96.6
Common Equity	8.4	-13.5	14.5	-12.4	100.0	95.3	114.4

As of October 31, 2016, FCE has total cash, restricted cash and financing availability of $156 million, including a committed $40 million revolving loan facility with NRG. FCE has a total backlog of $432 million in revenues from service agreements and a growing "retained project" portfolio (i.e., on balance sheet), from which over time the company expects to realize recurring, high-margin revenue.



By expanding its retained project portfolio, FCE benefits from adding predictable and recurring revenue. Its current operating portfolio of 5 projects generates >$7 million in annual energy sales with an 18-year remaining term. The company plans to grow this portfolio, and thus its recurring revenue streams, from an existing base of 11.2 MW to at least 50 MW. Including the existing Project, FCE has 6.5 MW under construction (CA & CT), and as its installed base of projects expands, an increasing portion of the company's total production capacity will be filled by scheduled fuel cell module replacements under long-term (up to 20 years) service agreements. Under this revised business model, recurring fuel cell module construction becomes locked-in, currently representing 94 megawatts of future production. This strategy not only monetizes existing inventory while enhancing margins and cash flow, but also mitigates the absence of Federal policy support (i.e., loss of ITC) and lowers FCE's breakeven targets by generating incremental EDITDA.

Operating Portfolio		
Market	**MW**	**State**
Healthcare	1.4	CA
Wastewater	1.4	CA
Industrial & Process	5.6	CT
Government	1.4	CA
Education	1.4	CT
Total operating	11.2	
Under construction		
Wastewater	2.8	CA
Grid support	3.7	CT
Total Portfolio	17.7	

At the same time, FCE has made significant downward reductions to its annualized production rate (now 25 megawatts annually) to bring it into better alignment with existing inventory and the timing of expected fuel cell project deployments. While the recently announced staff reductions will defer staff growth targets previously agreed upon with the State, FCE is in the process of pushing out the target date to achieve these employment targets (the State has indicated it may be willing to reasonably consider such adjustments). These changes are expected to reduce operating expenses by $6 million per year, easing strains on cash resources.

D. Diversified Business Mix

In addition to FCE's Energy Supply Business, which has succeeded in commissioning 10 projects, totaling 41 MW globally in 2016, the successful testing of both the DFC4000 (being used in the proposed Project) and a utility-owned MW-class fuel cell commissioned in Europe indicates considerable promise is seen in FCE's Energy Recovery and Energy Storage businesses. In energy recovery, FCE has entered into a fuel cell carbon capture joint agreement with ExxonMobil. FCE will be installing the first demonstration fuel cell plant at a 2.7-gigawatt dual-fuel, mixed-use coal and gas electric generating station in Alabama for Alabama Power, a subsidiary of utility giant Southern Company. In Canada, FCE is executing on a contract with Alberta Innovates for an engineering study of FCE's carbon capture solution at one of two different heavy oil thermal facilities in the oil sands region of Canada. Alberta Innovates is a consortium of many of the leading global oil and gas companies. The study is the first multi-phase project to prove FCE's solution and may potentially lead to megawatt-scale fuel cell carbon capture application at an existing gas-fired plant. Finally, FCE commissioned an energy recovery application in 2016, at an Avangrid-owned natural gas letdown station. This application provides electrical efficiencies in excess of 60% by utilizing what is, in essence, free energy from the gas pressure reduction or letdown process. Staff believes FCE is making significant progress to diversify its business base, sourcing multiple globally-derived revenue streams.

E. Liquidity & Capital Resources

According to FCE's latest SEC Form 10K (Oct 31, 2016), cash, cash equivalents on hand, cash flows from operating activities, availability under FCE loan facilities and access to the capital markets will be sufficient to meet FCE working capital and capital expenditure needs for at least the next twelve months. In interviews with the CEO and CFO, both expressed confidence that the downsizing of staff and other cost control and business restructuring measures implemented in November 2016, together with considerable cash and financing resources available, afford the company the ability to transition to a business model with more retained projects plus diversified revenue streams to sustain and grow operations over time. According to the 10K, FCE's future liquidity will be dependent on obtaining a combination of increasing order and contract volumes, increasing cash flows from power purchase agreement and service portfolios, and cost reductions necessary to achieve profitable operations. FCE's management currently estimates that FCE could be net income positive once it achieves 60 - 70 MW of annual production volume. This estimate assumes a sales mix of turn-key projects in the U.S. and Europe, royalties from the Asia market, and growing service, power purchase agreement and advanced technologies revenues and margins.

Further according to the 10K, cash and cash equivalents including restricted cash totaled $118.3 million as of October 31, 2016, compared to $85.7 million as of October 31, 2015. As of October 31, 2016, restricted cash and cash equivalents were $34.1 million, of which $9.4 million was classified as current and $24.7 million was classified as non-current, compared to $26.9 million total restricted cash and cash equivalents as of October 31, 2015, of which $6.3 million was classified as current and $20.6 million was classified as non-current. In addition, FCE has $38.2 million of availability under its project finance loan agreement with NRG Energy through its finance subsidiary, which can be used for project asset development. FCE also has an effective shelf registration statement on file with the SEC for issuance of debt and equity securities. It is clear, however, that until FCE demonstrates success with projects under development, access to the capital markets will be constrained, which will leave the company reliant on other forms of credit that generally are more costly and challenging to source.

F. Conclusion

While FCE is not without operating and business challenges (see **Appendix III** for a more fulsome representation of FCE's financial and operating risks), staff has gained sufficient confidence in FCE's strategy with respect to retaining projects on balance sheet to generate recurrent cash and revenue streams for the company. The successful implementation of this strategy will allow FCE to better align its operations with current reality, and to diversify revenues in its offshore energy supply business, energy recovery and energy storage businesses so as to provide a credible path to financial stability and sustained growth. That said, FCE also needs to remain successful in continuing to develop its core business – and the existing fuel cells and its next generation high efficiency modules should position the company well to succeed competitively as the power generation marketplace progressively moves to cleaner, sustainable and higher availability sources.

Merchant Risk

The Project will operate, at least initially, without a long-term, revenue-generating contract in place for any of its value streams: power sales, REC sales, and capacity services. This means that project cash flows can vary due not only to variations in production but also to variations in spot market energy pricing.

While the overall risk profile of the Project is composed of different types of risk, including those that directly and indirectly impact production and spot market pricing, financing a project without a long-term contracted revenue stream is a novel approach for a Green Bank Credit Facility and therefore requires its own consideration.

For each specific type of risk outlined below in subsequent sections, there are specific structures, concepts, and mitigants that staff has designed to minimize Green Bank exposure to certain downside scenarios. There are, however, several overarching

mitigants that will be put in place due to the overall concept of merchant risk, and in effect, can be applied to almost all of the defined Project risks. Those overarching mitigants are identified below:

General Merchant Risk Mitigants:

A.) The Credit Facility will benefit from an unconditional payment and performance guaranty from FCE (the "Guaranty"). As of January 12, 2017, the company reported Net Assets (Total Assets minus Total Liabilities minus Preferred Equity) of $114.4 million on the Balance Sheet for the period ending October 31, 2016[10].

B.) The Credit Facility will be secured by a first priority perfected lien on, and security interest in, all Project assets, and collateral assignment of all Project cash flows (the "Project Collateral")

C.) The Credit Facility will also be secured by a cash reserve account that will be funded by to-be-unrestricted cash from FCE's contingency account associated with the Bridgeport Project. The Bridgeport Project was commissioned in December 2013, with the support of a Green Bank loan that currently carries an outstanding balance of $[redacted] and which is expected to be fully repaid by December 2025. FCE is current on its Bridgeport Project payment obligations. Separate from the funds available to repay the Green Bank loan to the Bridgeport Project, the Bridgeport Project contingency account holds approximately $[redacted] that is expected to be released, according to the following schedule: $[redacted] in January 2025, $[redacted] in January 2026, $[redacted] in January 2027, and the remaining $[redacted] in January 2028. From the expected $[redacted] cash release in January 2025, the Credit Facility for the Project proposed to be financed herein will obtain a security interest in, and be collateralized by, $[redacted] (the "Cash Collateral"). The Credit Facility will maintain this Cash Collateral of $[redacted] until specific performance conditions are met: specifically, that (i.) the principal outstanding on the Credit Facility falls below $[redacted], (ii.) there is no unpaid, accrued interest liability, and (iii.) Green Bank and FCE jointly determine, on a commercially reasonable basis, that there is enough operating revenue to cover annual O&M and debt service payments. If those conditions are met, the Cash Collateral will be allowed to decrease along with the principal outstanding on the Credit Facility.

D.) All Project cash flows will be held in an independent Lockbox Account (the "Escrow Account"), for the benefit of the Credit Facility, and excess Project cash flows will be held in the Escrow Account for use in future periods so as to fund any shortfalls in debt service payments. The Escrow Account will hold all excess Project cash flows until specific performance conditions are met; specifically, that (i.) the Project is still operating after five (5) years, (ii.) there is no unpaid, accrued interest liability, and (iii.) Green Bank and FCE jointly determine, on a commercially reasonable basis, that there is enough operating revenue to cover annual O&M and debt service payments. If those conditions are met, then excess cash flow will be released from the escrow account, beyond the cash required to cover annual O&M and debt service payments.

E.) Green Bank has structured the Credit Facility to provide a flexible interest rate payment schedule so that the Project will not incur an event of default if certain minimum payments are made, specifically the principal due and a minimum interest rate of [redacted]% (P.A.) (the "Minimum Interest Rate"). Notwithstanding the above, Green Bank is still expected to receive a [redacted]% (P.A.) rate of return on its capital (the "Expected Interest Rate) by requiring any unpaid interest that is accrued above the amount paid but below the amount required to satisfy the Expected Interest Rate to be carried forward as a repayment obligation until the earlier of (i.) the Credit Facility's maturity date, or (ii.) there is sufficient

[10] See **Appendix II**

cash from the Project to satisfy the unpaid interest (the "Interest Carryover"). This flexible interest rate payment schedule will allow the Project to function in a merchant capacity, accounting for unexpected shortfalls in Project cash flows due to production and spot market pricing, but maintaining the return required for Green Bank participation in the Credit Facility.

F.) Green Bank staff has conducted extensive cash flow modeling and stress tests, under various "downside" scenarios, to better understand and assess Green Bank's risk exposure and repayment prospects. Such modeling has helped (i.) in determining appropriate levels of risk mitigation, for example in calculating the appropriate amount of Cash Collateral required to reduce Green Bank's exposure across the financing term given the constraints on both the restrictions on those funds and project cash flows, and (ii.) in giving staff confidence in the undertaking of financing a merchant project, given the implemented structural and conditional mitigants. Such stress testing indicates that under staff's "worst case" scenarios, Green Bank would receive approximately 108% of its principal repaid over 20 years on a cash-on-cash basis.

Technology Risk

The Project represents the first commercial implementation, at scale, of the latest configuration of FCE's DFC fuel cell technology, which is capable of achieving up to [redacted]% electric power generation system compared with up to [redacted]% in previous configurations. As such, there is a lack of performance history in the field, although there has been significant in-house testing of the technology, as explained below. Should the Project underperform – because two of the main revenue drivers of the Project, wholesale power sales and Class I REC sales, are monetized on a per kilowatt hour ("kWh") basis – the Project's ability to adequately cover debt service payments to Green Bank will be impaired. And if Project underperformance requires expenditures for repair that are beyond what is projected and allocated for on a periodic basis, Project cash flow available for debt service may be further impaired.

Technology Risk Mitigants:

1.) Green Bank funds will not be advanced until COD, at which point the Project will be fully operational and will have undergone systematic testing, above and beyond standard testing required of all FCE projects, to ensure operating performance aligns with expectations.

2.) FCE has developed and operated a small-scale version of the technology on its corporate location over a 6-month period, providing valuable operating data and experience with the high-efficiency unit.

3.) FCE has significant experience and expertise in developing and operating innovative fuel cells, such as the Bridgeport Project, which remains the largest standalone fuel cell in the United States.

Production Risk

Aside from performance risk associated with any new technology (which, as explained above, staff believes are reasonable under the circumstances), Project cash flows available for debt service can fluctuate due to a range of unexpected operational issues, ranging from unexpected outages from fuel line disruptions to disturbance from the surrounding urban environment.

Production Risk Mitigants:

1.) Green Bank pro forma modeling scenarios account for annual allocations of cash to support O&M and planned restacking.

2.) FCE will operate and maintain the Project, into which it has sourced approximately $[redacted] of developmental capital for the purpose of scaling up deployment of similar projects with the same underlying technology.

3.) Both the Project and FCE corporate headquarters are located in Danbury. Staff expects that FCE will be responsive to any operational issues that arise.

Commodity Risk – Natural Gas

The Project uses natural gas as its fuel source, the cost of which can make up a significant portion of a fuel cell's operating costs, and so Project operating costs are negatively impacted by increases in the price of natural gas. Because the Project will monetize electric power sales on the wholesale market, however, and because the wholesale power market in Connecticut is also largely a function of natural gas prices, Project revenues are positively impacted by increases in the price of natural gas. For example, looking at wholesale electricity and natural gas prices from within the ISO New England Market, specifically from the Mass Hub for electricity prices and the Algonquin hub for gas prices, in 2016 there was a 0.74 correlation coefficient between natural gas prices and wholesale rates[11].

The net result is that Project cash flows are subject to changes in the price of natural gas, but it is the difference in spread between the impacts of natural gas pricing on Project costs vs. revenues that dictate the Project's natural gas risk exposure. In addition to risks associated with the pricing of natural gas, there is also risk associated with the availability of natural gas, especially during times of excess market demand such as during winter months. While curtailment of natural gas deliveries for the Project would limit production and reduce operating cash flows, contracts for "firm" delivery protect against this risk (more below).

Commodity/Gas Risk Mitigants:

1.) Green Bank will require, as a Condition Precedent to advancing the Credit Facility, that FCE secure a multi-year (2 – 5 year) "strip" with a 3rd party energy services provider to monetize wholesale electric power and REC sales at pre-determined prices, and to lock in natural gas pricing for fuel across the same time period. Such an arrangement will shield the Project from short-term fluctuations in natural gas pricing, and will provide Green Bank with multi-year view on pricing and a runway of time to prepare for potential future market shocks. Furthermore, the multi-year strip for natural gas for fuel will be what is known as a "firm" contract, meaning that the supply of natural gas is uninterruptable for the duration of the contract, thus shielding the project from seasonal variations in natural gas availability.

2.) The impacts on Project costs vs. revenues from natural gas pricing are partially offsetting, due to their opposite relationships to changes in commodity pricing. Furthermore, because there are additional components of Project revenues and costs that are not related to natural gas prices, the overall impact of swings in natural gas pricing gets diffused as it relates to net operating cash flow available for debt service.
    a. Green Bank pro forma modeling confirms the Project's natural mitigation with respect to gas pricing. For example, a recent article in the *Hartford Business Journal*, dated March 2, 2017, states, "Natural gas averaged $3.09 per million British thermal units last year [2016], down from $4.64 in 2015 and also the lowest since at least 2003. The average wholesale electricity price last year [2016] was $28.94 per megawatt hour, down from

[11]U.S. Energy Information Administration, "Wholesale Electricity and Natural Gas Market Data," http://www.eia.gov/electricity/wholesale/#history, (March 3, 2017).

$41 in 2015[12]." The decline in wholesale electricity prices represents a 29% decrease in value. Comparing the 2015 values with the 2016 declines shows a decline in operating cash flow available for debt service of only 2.6%, due to the counterbalancing effects of gas prices on revenues vs. costs and also the dilution of gas exposure across the rest of the operating components of the project.

Market Risk

As a Merchant project, the Project is subject to pricing in various spot markets that are impacted by factors outside of the control of the Project; for example, Class I REC pricing is a function of supply and demand for environmental attributes as dictated by state renewable portfolio standards, and as seen above, the wholesale electricity market is a function of natural gas prices.

Market Risk Mitigants:

The multi-year pricing strips for natural gas fuel cost, wholesale power prices, and Class I REC pricing that Green Bank will require as a Condition Precedent for advance will also serve to hedge against market exposure to key components of expected Project cash flows.

Portfolio/Exposure Risk

Green Bank currently has a $6.0 million loan outstanding to FCE for the Bridgeport Project. The addition of the Credit Facility would bring Green Bank's total exposure to FCE and FCE projects up to $11 million, which represents 6.2% of Green Bank's Total Assets as of December 31, 2016 ($177 million).

Portfolio/Exposure Risk Mitigants:

1.) Mitigants such as the Project Collateral, Cash Collateral, Escrow Account, and multi-year financing strips all combine to limit the exposure to losses that Green Bank could experience on principal invested.

2.) Staff's stress-testing of financial models show that, even under duress, the project can reasonably be expected to perform in a manner sufficient to deliver a return of principal, plus minimum interest, to Green Bank, over the course of the financing term.

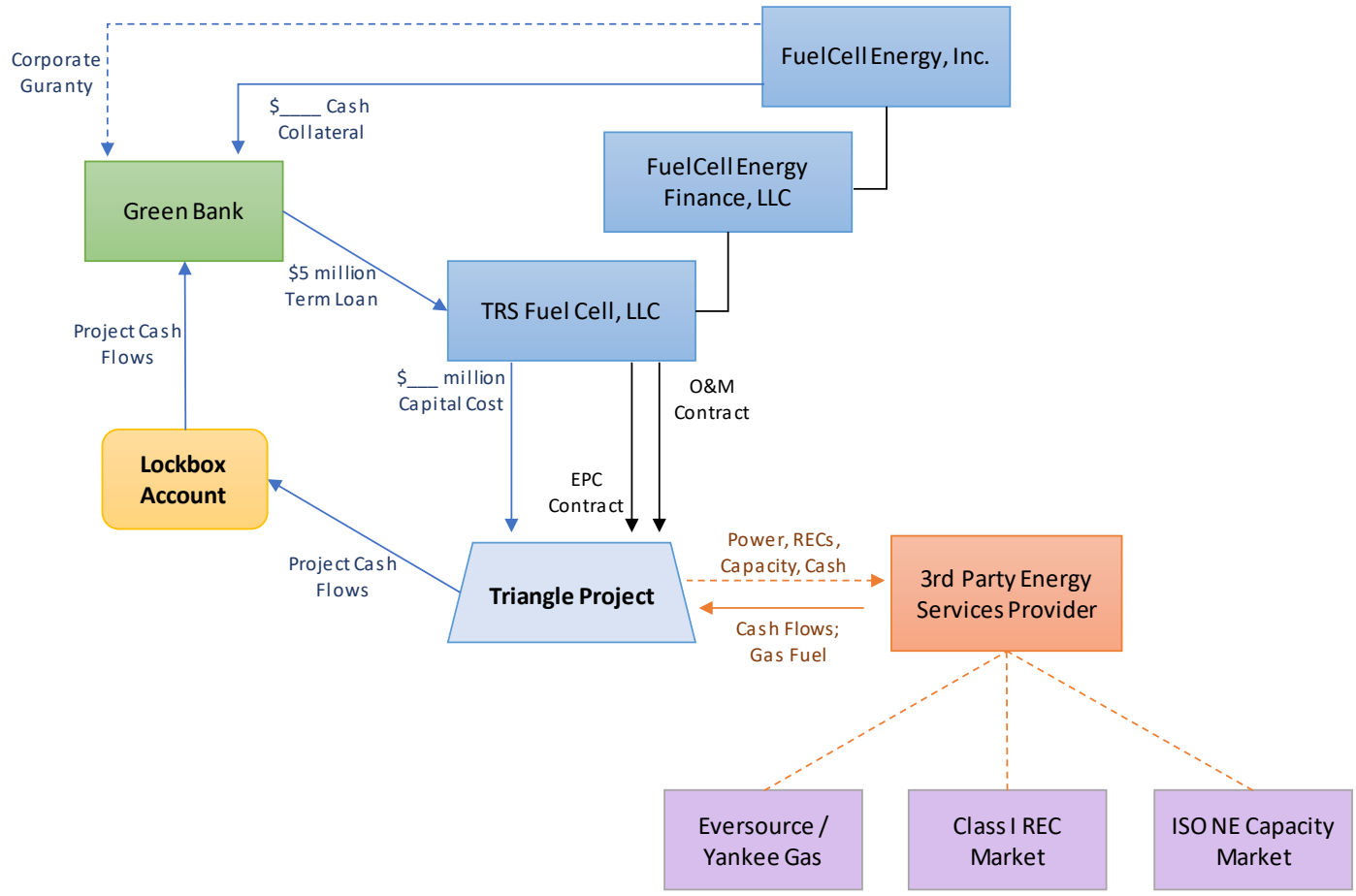
Proforma Projection Model for Debt Service

Staff has worked with FCE to develop reasonable projection model estimates for the Project. Staff then took these estimates and developed a stress-case scenario (see **Appendix IV**). Based on these estimates, staff anticipates that over the 20 year term the Project will generate sufficient cash flow to service the Loan. As additional assurance, staff looks to the financial backing from FCE plus the Project escrow and cash collateral accounts that have been structured into the transaction.

[12]Matt Pilon, "New England Electricity Prices Hit 13-year Low," *Hartford Business Journal*, http://www.hartfordbusiness.com/article/20170302/NEWS01/170309976/1020?utm_source=enews&utm_medium=GreenGuide&utm_campaign=Thursday, (March 2, 2017).

Capital Flow Diagram and Tables

Capital Flow Diagram - Term Financing



Sources and Uses – Project Construction

[REDACTED]

Project Construction Schedule

[REDACTED]

Strategic Plan

Is the program proposed, consistent with the Board approved Comprehensive Plan and Budget for the fiscal year?

As confirmed in the Bridgeport Fuel Cell Project Qualification Memo approved by the Board and Deployment Committee on November 30, 2012, pursuant to the Green Bank's mandate to foster the growth, development, and commercialization of renewable energy sources and related enterprises, and to stimulate demand for renewable energy and the deployment of renewable energy sources that serve end use customers in Connecticut, the Board has determined that is in keeping with Conn. Gen. Stat. Section 16-245n for Green Bank to fund certain commercial activities that support projects involving the use of fuel cell technology for distributed generation ("DG") power production.

Staff recommends that these same criteria be applied to fuel cell facilities, such as the Project, that are tied to the grid and provide benefits to the greater electric distribution system, for the reasons included throughout this Memo, and in particular as laid out in the **Strategic Selection and Importance** section of this Memo.

Ratepayer Payback

How much clean energy is being produced (i.e. kWh over the projects lifetime) from the program versus the dollars of ratepayer funds at risk?

The Project is expected to produce 29,331 MWh during the first year of operation, and up to 556,187 MWh during its 20-year useful life. Compared with $5,000,000 of ratepayer funds at risk, the Project is expected to yield up to 111 kWh per $1 of ratepayer funds over a 20-year term.

Terms and Conditions

What are the terms and conditions of ratepayer payback, if any?

See Term Sheet at **Appendix I**.

Capital Expended

How much of the ratepayer and other capital that Green Bank manages is being expended on the project?

$5,000,000

Risk

What is the maximum risk exposure of ratepayer funds for the program?

$5,000,000

Financial Statements

How is the program investment accounted for on the balance sheet and profit and loss statements?

The loan would result in a $5,000,000 reduction of cash and a $5,000,000 increase in promissory notes (Statutory & Infrastructure program).

Target Market

Who are the end-users of the engagement?

The energy from the Project will be sold at wholesale rates via an energy marketing agreement with the ultimate recipients of the energy being customers of Eversource.

Green Bank Role, Financial Assistance & Selection/Award Process

Lender via Strategic Selection process pursuant to the Green Bank Operating Procedures (see **Strategic Selection and Importance** section of this Memo).

Program Partners

FuelCell Energy, Inc., Danbury, CT

Risks and Mitigation Strategies

Lending risks and mitigation strategies have been addressed in the **Project Risks and Mitigants** section of this Memo.

Resolutions

WHEREAS, in accordance with (1) the statutory mandate of the Connecticut Green Bank ("Green Bank") to foster the growth, development, and deployment of clean energy sources that serve end-use customers in the State of Connecticut, (2) the State's Comprehensive Energy Strategy ("CES") and Integrated Resources Plan ("IRP"), and (3) Green Bank's Comprehensive Plan for Fiscal Years 2017 and 2018 (the "Comprehensive Plan") in reference to the CES and IRP, Green Bank continuously aims to develop financing tools to further drive private capital investment into clean energy projects;

WHEREAS, FuelCell Energy, Inc., of Danbury, Connecticut ("FCE") has used previously committed funding (the "Bridgeport Loan") from Green Bank to successfully develop a 15 megawatt fuel cell facility in Bridgeport, Connecticut (the "Bridgeport Project"), and FCE has operated and maintained the Bridgeport Project without material incident, is current on payments under the Bridgeport Loan, and has requested financing support from the Green Bank to develop a 3.7 megawatt high efficiency fuel cell project in Danbury, Connecticut (the "Project");

WHEREAS, staff has considered the merits of the Project and the ability of FCE to construct, operate and maintain the facility, support the obligations under the Loan throughout its 20 year life, and as set forth in the due diligence memorandum dated March 10, 2017, has recommended this support be in the form of a term loan not to exceed $5,000,000, secured by all project assets, contracts and revenues as well as an unconditional performance and payment guarantee of FCE (the "Term Loan");

WHEREAS, Green Bank staff recommends that the Green Bank Board of Directors ("Board") approve of the Term Loan, in an amount not to exceed $5,000,000.

NOW, therefore be it:

RESOLVED, that the Green Bank Board of Directors hereby approves the Term Loan in an amount not to exceed $5,000,000 for the Project, as a strategic selection and award pursuant to Green Bank Operating Procedures Section XII; and

RESOLVED, that the President of the Green Bank and any other duly authorized officer is authorized to take appropriate actions to make the Term Loan to FCE (or a special purpose entity wholly-owned by FCE) in an amount not to exceed $5,000,000 with terms and conditions consistent with the memorandum submitted to the Board dated March 10, 2017, and as he or she shall deem to be in the interests of the Green Bank and the ratepayers no later than 180 days from the date of authorization by the Board of Directors; and

RESOLVED, that the proper Green Bank officers are authorized and empowered to do all other acts and execute and deliver all other documents and instruments as they shall deem necessary and desirable to effect the above-mentioned Term Loan.

Submitted by: Bryan Garcia, President and CEO; Bert Hunter, EVP and CIO; Ben Healey and Chris Magalhaes, Clean Energy Finance.

APPENDIX I – DRAFT TERM SHEET

[REDACTED]

APPENDIX II – FUELCELL ENERGY, INC. – FINANCIAL STATEMENTS[13]

INCOME STATEMENT

Consolidated Statement of Operations Data:
(Amounts presented in thousands, except for per share amounts)

	2016	2015	2014	2013	2012
Revenues:					
Product sales	$ 62,563	$ 128,595	$ 136,842	$ 145,071	$ 94,950
Service agreements and license revenues	32,758	21,012	25,956	28,141	18,183
Advanced technology contracts	12,931	13,470	17,495	14,446	7,470
Total revenues	108,252	163,077	180,293	187,658	120,603
Costs and expenses:					
Cost of product sales	63,474	118,530	126,866	136,989	93,876
Cost of service agreement and license revenues	33,256	18,301	23,037	29,683	19,045
Cost of advanced technology contracts	11,879	13,470	16,664	13,864	7,237
Total cost of revenues	108,609	150,301	166,567	180,536	120,158
Gross (loss) profit	(357)	12,776	13,726	7,122	445
Operating expenses:					
Administrative and selling expenses	25,150	24,226	22,797	21,218	18,220
Research and development costs	20,846	17,442	18,240	15,717	14,354
Total costs and expenses	45,996	41,668	41,037	36,935	32,574
Loss from operations	(46,353)	(28,892)	(27,311)	(29,813)	(32,129)
Interest expense	(4,958)	(2,960)	(3,561)	(3,973)	(2,304)
Income (loss) from equity investments	—	—	—	46	(645)
Impairment of equity investment	—	—	—	—	(3,602)
License fee and royalty income	—	—	—	—	1,599
Other income (expense), net	622	2,442	(7,523)	(1,208)	1,244
Provision for income tax	(519)	(274)	(488)	(371)	(69)
Net loss	(51,208)	(29,684)	(38,883)	(35,319)	(35,906)
Net loss attributable to noncontrolling interest	251	325	758	961	411
Net loss attributable to FuelCell Energy, Inc.	(50,957)	(29,359)	(38,125)	(34,358)	(35,495)
Preferred stock dividends	(3,200)	(3,200)	(3,200)	(3,200)	(3,201)
Net loss to common shareholders	$ (54,157)	$ (32,559)	$ (41,325)	$ (37,558)	$ (38,696)
Net loss to common shareholders					
Basic	$ (1.82)	$ (1.33)	$ (2.02)	$ (2.42)	$ (2.81)
Diluted	$ (1.82)	$ (1.33)	$ (2.02)	$ (2.42)	$ (2.81)
Weighted average shares outstanding					
Basic	29,774	24,514	20,474	15,544	13,789
Diluted	29,774	24,514	20,474	15,544	13,789

[13] FuelCell Energy Inc., FY 2016 Annual Report, October 31, 2016, SCE Form 10K, filed on January 12, 2017, pages 46, 47, & 59.

BALANCE SHEET

Consolidated Balance Sheet Data:
(Amounts presented in thousands, except for per share amounts)

	2016	2015	2014	2013	2012
Cash and cash equivalents (1)	$ 118,316	$ 85,740	$ 108,833	$ 77,609	$ 57,514
Working capital	150,206	129,010	141,970	83,066	55,729
Total current assets	202,469	203,898	217,031	189,329	140,626
Total assets	342,137	277,231	280,636	237,636	191,485
Total current liabilities	52,263	74,888	75,061	106,263	84,897
Total non-current liabilities	115,621	47,732	47,269	84,708	32,603
Redeemable preferred stock	59,857	59,857	59,857	59,857	59,857
Total equity (deficit)	114,396	94,754	98,449	(13,192)	14,128
Book value per share (2)	$ 3.25	$ 3.65	$ 4.11	$ (0.81)	$ 0.91

(1) Includes short-term and long-term restricted cash and cash equivalents.
(2) Calculated as total equity (deficit) divided by common shares issued and outstanding as of the balance sheet date.

CASH FLOW STATEMENT

Cash Flows

Cash and cash equivalents and restricted cash and cash equivalents totaled $118.3 million at October 31, 2016 compared to $85.7 million at October 31, 2015. At October 31, 2016, restricted cash and cash equivalents was $34.1 million, of which $9.4 million was classified as current and $24.7 million was classified as non-current, compared to $26.9 million total restricted cash and cash equivalents at October 31, 2015, of which $6.3 million was classified as current and $20.6 million was classified as non-current.

The following table summarizes our consolidated cash flows:

	2016	2015	2014
Consolidated Cash Flow Data:			
Net cash used in operating activities	$ (46,595)	$ (44,274)	$ (57,468)
Net cash used in investing activities	(41,452)	(6,930)	(7,079)
Net cash provided by financing activities	120,658	28,219	95,941
Effects on cash from changes in foreign currency rates	(35)	(108)	(260)
Net increase (decrease) in cash and cash equivalents	$ 32,576	$ (23,093)	$ 31,134

APPENDIX III – FUELCELL ENERGY INC - Excerpt from SCE Form 10K[14]

(FOR THE FISCAL YEAR ENDED OCTOBER 31, 2016)

Item 1A. RISK FACTORS

You should carefully consider the following risk factors before making an investment decision. If any of the following risks actually occur, our business, financial condition, or results of operations could be materially and adversely affected. In such cases, the trading price of our common stock could decline, and you may lose all or part of your investment.

We have incurred losses and anticipate continued losses and negative cash flow.

We have transitioned from a research and development company to a commercial products manufacturer, services provider and developer. We have not been profitable since our year ended October 31, 1997. We expect to continue to incur net losses and generate negative cash flows until we can produce sufficient revenues and margins to cover our costs. We may never become profitable. Even if we do achieve profitability, we may be unable to sustain or increase our profitability in the future. For the reasons discussed in more detail below, there are substantial uncertainties associated with our achieving and sustaining profitability. We have, from time to time, sought financing in the public markets in order to fund operations. Our future ability to obtain such financing, if required, could be impaired by a variety of factors, including, but not limited to, the price of our common stock and general market conditions.

Our cost reduction strategy may not succeed or may be significantly delayed, which may result in our inability to deliver improved margins.

Our cost reduction strategy is based on the assumption that increases in production will result in economies of scale. In addition, our cost reduction strategy relies on advancements in our manufacturing process, global competitive sourcing, engineering design, reducing the cost of capital and technology improvements (including stack life and projected power output). Failure to achieve our cost reduction targets could have a material adverse effect on our results of operations and financial condition.

Our announced workforce reduction may cause undesirable consequences and our results of operations may be harmed.

On December 1, 2016, we announced a workforce reduction of 17%, or 96 employees. This workforce reduction may yield unintended consequences, such as attrition beyond our intended reduction in workforce and reduced employee morale, which may cause our employees who were not affected by the reduction in workforce to seek alternate employment. Additional attrition could impede our ability to meet our operational goals, which could have a material adverse effect on our financial performance. In addition, as a result of the reductions in our workforce, we may face an increased risk of employment litigation. Furthermore, employees whose positions will be eliminated in connection with these trends may seek future employment with our competitors. Although all our employees are required to sign a confidentiality agreement with us at the time of hire, we cannot assure you that the confidential nature of our proprietary information will be maintained in the course of such future employment. We cannot assure you that we will not undertake additional reduction activities, that any of our efforts will be successful, or that we will be able to realize the cost savings and other anticipated benefits from our previous or any future reduction plans. In addition, if we continue to reduce our workforce, it may adversely impact our ability to respond rapidly to any new product, growth or revenue opportunities.

We have debt outstanding and may incur additional debt in the future, which may adversely affect our financial condition and future financial results.

Our total consolidated indebtedness was $83.2 million as of October 31, 2016. This includes approximately $43.4 million of debt at our project finance subsidiaries and $39.8 million at the corporate level. The majority of our debt is long-term with $5.3 million due within twelve months. We also have approximately $38.2 million of borrowing capacity under a revolving construction and term project financing facility. Our ability to make scheduled payments of the principal and interest or to refinance our indebtedness depends on our future performance, which is subject to economic, financial, competitive and other factors beyond our control. Our business may not generate cash flow from operations in the future sufficient to service our debt and make necessary capital expenditures. If we are unable to generate such cash flow, we may be required to adopt one or more alternatives, such as selling assets, restructuring debt or obtaining additional equity capital on terms that may be onerous or dilutive.

It is also possible that we may incur additional indebtedness in the future in the ordinary course of business. If new debt is added to current debt levels, the risks described above could intensify.

Our debt agreements contain customary representations and warranties, affirmative and negative covenants, and events of default that entitle the lenders to cause our indebtedness under the loan and security agreement to become immediately due and payable. In addition, our Loan and Security Agreement with Hercules Capital, Inc. contains a financial covenant whereby the Company is required to maintain an unrestricted cash balance of at least (a) 75% of the outstanding Loan balance plus (b) the amount of accounts payable (as defined under accounting principles generally accepted in the United States ('GAAP') not paid within 90

[14]FuelCell Energy Inc., FY 2016 Annual Report, October 31, 2016, SCE Form 10K, filed on January 12, 2017, pages 29 – 40.

days of the date payment was issued. As of October 31, 2016 the outstanding loan balance with Hercules Capital, Inc. was $20.0 million.

Our products compete with products using other energy sources, and if the prices of the alternative sources are lower than energy sources used by our products, sales of our products will be adversely affected. Volatility of electricity and fuel prices may impact sales of our products and services in the markets in which we compete.

Our products can operate using a variety of fuels, including primarily natural gas and biogas and also methanol, diesel, coal gas, coal mine methane, and propane. If these fuels are not readily available or if their prices increase such that electricity produced by our products costs more than electricity provided by other generation sources, our products would be less economically attractive to potential customers. In addition, we have no control over the prices of several types of competitive energy sources such as oil, gas or coal as well as local utility electricity costs. Significant decreases (or short term increases) in the price of these fuels or grid delivered prices for electricity could also have a material adverse effect on our business because other generation sources could be more economically attractive to consumers than our products.

The reduction or elimination of government subsidies and economic incentives for alternative energy technologies, including our fuel cell power plants, could reduce demand for our products and services, lead to a reduction in our revenues and adversely impact our operating results.

We believe that the near-term growth of alternative energy technologies, including our fuel cells, relies on the availability and size of government and economic incentives (including, but not limited to, the U.S. Federal investment tax credit (ITC), the incentive programs in South Korea and state renewable portfolio standard programs). The U.S. Federal Government extends an investment tax credit (ITC) that allows a taxpayer to claim a credit of 30% of qualified expenditures (up to a tax credit limit of $3,000/kW) for eligible power generation technologies. In December 2015, the United States Congress extended the ITC for 5 years, beginning January 1, 2017. The intention, as publicly stated by Congressional leaders, was to extend the ITC to all eligible technologies; however, the actual approved language only extended the ITC for solar energy technologies. As of January 1, 2017, fuel cells and a number of other power generation technologies are no longer eligible for the ITC. Based on numerous public comments by leaders and members of Congress in the media and in the Congressional Record that the omission was an oversight that will be corrected, the fuel cell industry is continuing outreach to ensure parity of domestically designed and manufactured fuel cells with solar technologies. There can be no assurance regarding the timing of and ultimate passage of a bill to extend the ITC.

Other government incentives expire, phase out over time, exhaust the allocated funding, or require renewal by the applicable authority. In addition, these incentive programs could be challenged by utility companies, or be found to be unconstitutional, and/or could be reduced or discontinued for other reasons.

Further, the recent presidential and congressional elections in the United States could result in significant changes in, and uncertainty with respect to, legislation, regulation and government policy. While it is not possible to predict whether and when any such changes will occur, changes at the local, state or federal level could impact fuel cell market adoption in the USA and the alternative energy technologies sector in the USA, generally. Specific legislative and regulatory proposals discussed during and after the election that could have a material impact on us include, but are not limited to, reform of the federal tax code; infrastructure renewal programs; and modifications to international trade policy, public company reporting requirements, environmental regulation and antitrust enforcement.

We are currently unable to predict whether reform discussions will meaningfully change existing legislative and regulatory environments relevant for our business, or if any such changes would have a net positive or negative impact on our business. To the extent that such changes have a negative impact on us or the industries we serve, including as a result of related uncertainty, these changes may materially and adversely impact our business, financial condition, results of operations and cash flows.

Financial markets worldwide have experienced heightened volatility and instability which may have a material adverse impact on our Company, our customers and our suppliers.

Financial market volatility can affect both the debt, equity and project finance markets. This may impact the amount of financing available to all companies, including companies with substantially greater resources, better credit ratings and more successful operating histories than ours. It is impossible to predict future financial market volatility and instability and the impact on our Company and it may have a materially adverse effect on us for a number of reasons, such as:

- The long term nature of our sales cycle can require long lead times between application design, order booking and product fulfillment. For this, we often require substantial cash down payments in advance of delivery. Our growth strategy assumes that financing will be available for the Company to finance working capital or for our customers to provide

down payments and to pay for our products. Financial market issues may delay, cancel or restrict the construction budgets and funds available to the Company or our customers for the deployment of our products and services.

- Projects using our products are, in part, financed by equity investors interested in tax benefits as well as by the commercial and governmental debt markets. The significant volatility in the U.S. and international stock markets cause significant uncertainty and may result in an increase in the return required by investors in relation to the risk of such projects.

- If we, our customers and suppliers cannot obtain financing under favorable terms, our business may be negatively impacted.

Our contracted projects may not convert to revenue, and our project pipeline may not convert to contracts, which may have a material adverse effect on our revenue and cash flow.

Some of the orders we accept from customers require certain conditions or contingencies (such as permitting, interconnection or financing) to be satisfied, some of which are outside of our control. The time periods from receipt of a contract to installation may vary widely and are determined by a number of factors, including the terms of the customer contract and the customer's site requirements. This could have an adverse impact on our revenue and cash flow.

We have signed product sales contracts, engineering, procurement and construction contracts (EPC), power purchase agreements and long-term service agreements with customers subject to contractual, technology and operating risks as well as market conditions that may affect our operating results.

The Company applies the percentage of completion revenue recognition method to certain product sales contracts which are subject to estimates. On a quarterly basis, the Company performs a review process to help ensure that total estimated contract costs include estimates of costs to complete that are based on the most recent available information. The percentage of completion for the customer contracts based on this cost analysis is then applied to the total customer contract values to determine the total revenue to be recognized to date.

In certain instances, we have executed power purchase agreements (PPA) with the end-user of the power and site host of the fuel cell power plant. We may then sell the PPA to project investor or retain the project and collect revenue from the sale of power over the term of the PPA, recognizing electricity revenue as power is generated and sold.

We have contracted under long-term service agreements with certain customers to provide service on our products over terms up to 20 years. Under the provisions of these contracts, we provide services to maintain, monitor, and repair customer power plants to meet minimum operating levels. Pricing for service contracts is based upon estimates of future costs including future stack replacements. While we have conducted tests to determine the overall life of our products, we have not run our products over their projected useful life prior to large-scale commercialization. As a result, we cannot be sure that our products will last to their expected useful life, which could result in warranty claims, performance penalties, maintenance and stack replacement costs in excess of our estimates and losses on service contracts.

We extend product warranties, which could affect our operating results.

We provide for a warranty of our products for a specific period of time against manufacturing or performance defects. We accrue for warranty costs based on historical warranty claim experience, however actual future warranty expenses may be greater than we have assumed in our estimates. As a result, operating results could be negatively impacted should there be product manufacturing or performance defects in excess of our estimates.

Our products are complex and could contain defects and may not operate at expected performance levels which could impact sales and market adoption of our products or result in claims against us.

We develop complex and evolving products and we continue to advance the capabilities of the fuel cell stacks and are now producing stacks with a net rated power output of 350 kW and an expected five year life.

We are still gaining field operating experience on our products, and despite experience gained from our growing installed base and testing performed by us, our customers and our suppliers, issues may be found in existing or new products. This could result in a delay in recognition or loss of revenues, loss of market share or failure to achieve broad market acceptance. The occurrence of defects could also cause us to incur significant warranty, support and repair costs, could divert the attention of our engineering personnel from our product development efforts, and could harm our relationships with our customers. The occurrence of these problems could result in the delay or loss of market acceptance of our products and would likely harm our business. Defects or performance problems with our products could result in financial or other damages to our customers. From time to time, we have been involved in disputes regarding product warranty issues. Although we seek to limit our liability, a product liability claim brought against us, even if unsuccessful, would likely be time consuming and could be costly to defend. Our customers could also

seek and obtain damages from us for their losses. We have accrued liabilities for potential damages related to performance problems, however actual results may be different than the assumptions used in our accrual calculations.

We currently face and will continue to face significant competition.

We compete on the basis of our products' reliability, efficiency, environmental considerations and cost. Technological advances in alternative energy products or improvements in the electric grid or other sources of power generation, or other fuel cell technologies may negatively affect the development or sale of some or all of our products or make our products non-competitive or obsolete prior to commercialization or afterwards. Other companies, some of which have substantially greater resources than ours, are currently engaged in the development of products and technologies that are similar to, or may be competitive with, our products and technologies.

Several companies are involved in fuel cell development, although we believe we are the only domestic company engaged in significant manufacturing and commercialization of carbonate fuel cells. Emerging fuel cell technologies (and companies developing them) include PEM stationary fuel cells (Ballard Power Systems, Inc. and Plug Power), phosphoric acid fuel cells (Doosan Fuel Cells America) and solid oxide fuel cells (LG/Rolls Royce partnership, GE and Bloom Energy). Each of these competitors has the potential to capture market share in our target markets. There are also other potential fuel cell competitors internationally that could capture market share.

Other than fuel cell developers, we must also compete with companies that manufacture more mature combustion-based equipment, including various engines and turbines, and have well-established manufacturing, distribution, and operating and cost features. Electrical efficiency of these products can be competitive with our DFC power plants in certain applications. Significant competition may also come from gas turbine companies.

We derive significant revenue from contracts awarded through a competitive bidding process involving substantial costs and risks. Due to this competitive pressure, we may be unable to grow revenue and achieve profitability.

We expect a significant portion of the business that we will seek in the foreseeable future will be awarded through competitive bidding versus other fuel cell technologies and other forms of power generation. The competitive bidding process involves substantial costs and a number of risks, including the significant cost and managerial time to prepare bids and proposals for contracts that may not be awarded to us and our failure to accurately estimate the resources and costs that will be required to fulfill any contract we win. In addition, following a contract award, we may encounter significant expense, delay or contract modifications as a result of our competitors protesting or challenging contracts awarded to us in competitive bidding. In addition, multi-award contracts require that we make sustained post-award efforts to obtain task orders under the contract. We may not be able to obtain task orders or recognize revenue under these multi-award contracts. Our failure to compete effectively in this procurement environment would adversely affect our revenue and/or profitability.

We have two large and influential stockholders, which may make it difficult for a third party to acquire our common stock.

POSCO Energy currently owns approximately 7% of our outstanding common stock and NRG Energy owns approximately 4% of our outstanding common stock, which could make it difficult for a third party to acquire our common stock. POSCO Energy is also a licensee of our technology and purchaser of our products and NRG is a purchaser of our products. Therefore, it may be in their interest to exert their substantial influence over matters concerning our overall strategy and technological and commercial development.

Unanticipated increases or decreases in business growth may result in adverse financial consequences for us.

If our business grows more quickly than we anticipate, our existing and planned manufacturing facilities may become inadequate and we may need to seek out new or additional space, at considerable cost to us. If our business does not grow as quickly as we expect, our existing and planned manufacturing facilities would, in part, represent excess capacity for which we may not recover the cost; in that circumstance, our revenues may be inadequate to support our committed costs and our planned growth, and our gross margins, and business strategy would be adversely affected.

Our plans are dependent on market acceptance of our products.

Our plans are dependent upon market acceptance of, as well as enhancements to, our products. Fuel cell systems represent an emerging market, and we cannot be sure that potential customers will accept fuel cells as a replacement for traditional power sources. As is typical in a rapidly evolving industry, demand and market acceptance for recently introduced products and services are subject to a high level of uncertainty and risk. Since the distributed generation market is still evolving, it is difficult to predict with certainty the size of the market and its growth rate. The development of a market for our products may be affected by many factors that are out of our control, including:

- the cost competitiveness of our fuel cell products including availability and output expectations and total cost of ownership;
- the future costs of natural gas and other fuels used by our fuel cell products;
- customer reluctance to try a new product;
- the market for distributed generation;
- local permitting and environmental requirements; and
- the emergence of newer, more competitive technologies and products.

If a sufficient market fails to develop or develops more slowly than we anticipate, we may be unable to recover the losses we will have incurred in the development of our products and may never achieve profitability.

As we continue to expand markets for our products, we intend to continue offering power production guarantees and other terms and conditions relating to our products that will be acceptable to the marketplace, and continue to develop a service organization that will aid in servicing our products and obtain self-regulatory certifications, if available, with respect to our products. Failure to achieve any of these objectives may also slow the development of a sufficient market for our products and, therefore, have a material adverse effect on our results of operations and financial condition.

We are substantially dependent on a concentrated number of customers and the loss of any one of these customers could adversely affect our business, financial condition and results of operations.

We contract with a concentrated number of customers for the sale of products and for research and development contracts. This includes POSCO Energy, which is a related party and owns approximately 7% of the outstanding common shares of the Company. POSCO Energy accounted for 48% of the Company's total revenues in fiscal year 2016.

There can be no assurance that we will continue to achieve the current level of sales of our products to our largest customers. Even though our customer base is expected to increase and our revenue streams to diversify, a substantial portion of net revenues could continue to depend on sales to a limited number of customers. Our agreements with these customers may be canceled if we fail to meet certain product specifications or materially breach the agreements, and our customers may seek to renegotiate the terms of current agreements or renewals. The loss of, or a reduction in sales to, one or more of our larger customers could have a material adverse effect on our business, financial condition and results of operations.

We have licensed certain technology and market access to POSCO Energy which limits our ability to independently access the Asian market.

We entered into manufacturing and technology transfer agreements 2007, 2009 and 2012 with POSCO Energy. The Cell Technology Transfer Agreement ('CTTA'), executed in October 2012, provides POSCO Energy with the technology to manufacture DFC power plants in South Korea and the market access to sell power plants throughout Asia. In October 2016, the Company and POSCO Energy extended the terms of the 2007 and 2009 license agreements to be consistent with the term of the CTTA which expires on October 31, 2027. The term of these agreements may be extended beyond 2027 through future extensions, each for a period of five (5) years, by mutual agreement of the Company and POSCO Energy. In conjunction with the CTTA, the Company receives a 3.0% royalty on POSCO Energy net product sales as well as a royalty on each scheduled fuel cell module replacement under service agreements for modules that were built by POSCO Energy and installed at any plant in Asia under terms of the Master Service Agreement between the Company and POSCO Energy. As a result, we are reliant on POSCO Energy to develop and grow the Asian market. POSCO Energy's future growth and strategic plans may not always align with ours.

If our goodwill and other intangible assets, long-lived assets, inventory or project assets become impaired, we may be required to record a significant charge to earnings.

We may be required to record a significant charge to earnings in our financial statements should we determine that our goodwill, other intangible assets (i.e., in process research and development ("IPR&D")), long-lived assets (i.e. property, plant and equipment), inventory, or project assets are impaired. Such a charge might have a significant impact on our financial position and results of operations.

As required by accounting rules, we review our goodwill for impairment at least annually as of July 31 or more frequently if facts and circumstances indicate that it is more likely than not that the fair value of a reporting unit that has goodwill is less than its carrying value. Factors that may be considered a change in circumstances indicating that the carrying value of our goodwill might not be recoverable include a significant decline in projections of future cash flows and lower future growth rates in our industry.

We review IPR&D for impairment on an annual basis. If the technology has been determined to be abandoned or not recoverable, we would be required to impair the asset. We review inventory and project assets for impairment whenever events or changes in circumstances indicate that the carrying amount may not be recoverable. We consider a project commercially viable and recoverable if it is anticipated to be sellable for a profit once it is either fully developed or fully constructed. If our projects are not considered commercially viable, we would be required to impair the respective project assets.

Our Advanced Technologies contracts are subject to the risk of termination by the contracting party and we may not realize the full amounts allocated under the contracts due to the lack of Congressional appropriations.

A portion of our fuel cell revenues have been derived from long-term cooperative agreements and other contracts with the U.S. Department of Energy and other U.S. Government agencies. These agreements are important to the continued development of our technology and our products. We also contract and partner with private sector companies under certain Advanced Technology contracts to develop strategically important and complementary offerings.

Generally, our government research and development contracts are subject to the risk of termination at the convenience of the contracting agency. Furthermore, these contracts, irrespective of the amounts allocated by the contracting agency, are subject to annual Congressional appropriations and the results of government or agency sponsored reviews and audits of our cost reduction projections and efforts. We can only receive funds under these contracts ultimately made available to us annually by Congress as a result of the appropriations process. Accordingly, we cannot be sure whether we will receive the full amounts awarded under our government research and development or other contracts. Failure to receive the full amounts under any of our government research and development contracts could materially and adversely affect our business prospects, results of operations and financial condition.

A negative government audit could result in an adverse adjustment of our revenue and costs and could result in civil and criminal penalties.

Government agencies, such as the Defense Contract Audit Agency, routinely audit and investigate government contractors. These agencies review a contractor's performance under its contracts, cost structure, and compliance with applicable laws, regulations, and standards. If the agencies determine through these audits or reviews that we improperly allocated costs to specific contracts, they will not reimburse us for these costs. Therefore, an audit could result in adjustments to our revenue and costs.

Further, although we have internal controls in place to oversee our government contracts, no assurance can be given that these controls are sufficient to prevent isolated violations of applicable laws, regulations and standards. If the agencies determine that we or one of our subcontractors engaged in improper conduct, we may be subject to civil or criminal penalties and administrative sanctions, payments, fines, and suspension or prohibition from doing business with the government, any of which could materially affect our results of operations and financial condition.

The U.S. government has certain rights relating to our intellectual property, including restricting or taking title to certain patents.

Multiple U.S. patents that we own have resulted from government-funded research and are subject to the risk of exercise of "march-in" rights by the government. March-in rights refer to the right of the U.S. government or a government agency to exercise its non-exclusive, royalty-free, irrevocable worldwide license to any technology developed under contracts funded by the government if the contractor fails to continue to develop the technology. These "march-in" rights permit the U.S. government to take title to these patents and license the patented technology to third parties if the contractor fails to utilize the patents.

We are classified for Government contracting as a "Large Business", which could adversely affect our rights to own future patents under DOE-funded contracts.

We are classified as a "large business" under DOE contracts. This allows us to own the patents that we develop under new DOE contracts if we obtain a waiver from DOE. A "large business" under applicable government regulations generally consists of more than 500 employees averaged over a one year period. We will not own future patents we develop under new contracts, grants or cooperative agreements funded by the DOE, unless we obtain a patent waiver from the DOE. Should we not obtain a patent waiver and outright ownership, we would nevertheless retain exclusive rights to any such patents, so long as we continue to commercialize the technology covered by the patents.

Our future success and growth is dependent on our market strategy.

We cannot assure you that we will enter into partnerships that are consistent with, or sufficient to support, our commercialization plans, and our growth strategy or that these relationships will be on terms favorable to us. Even if we enter into these types of relationships, we cannot assure you that the partners with which we form relationships will focus adequate resources on selling our products or will be successful in selling them. Some of these arrangements have or will require that we grant exclusive rights

to companies in defined territories. These exclusive arrangements could result in our being unable to enter into other arrangements at a time when the partner with which we form a relationship is not successful in selling our products or has reduced its commitment to marketing our products. In addition, future arrangements may also include the issuance of equity and warrants to purchase our equity, which may have an adverse effect on our stock price. To the extent we enter into partnerships or relationships, the failure of these partners to assist us with the deployment of our products may adversely affect our results of operations and financial condition.

We depend on third party suppliers for the development and supply of key raw materials and components for our products.

We use various raw materials and components to construct a fuel cell module, including nickel and stainless steel which are critical to our manufacturing process. We also rely on third-party suppliers for the balance-of-plant components in our products. Suppliers must undergo a qualification process, which takes four to twelve months. We continually evaluate new suppliers and we are currently qualifying several new suppliers. There are a limited number of suppliers for some of the key components of products. A supplier's failure to develop and supply components in a timely manner, supply components that meet our quality, quantity or cost requirements, technical specifications, or our inability to obtain alternative sources of these components on a timely basis or on terms acceptable to us could harm our ability to manufacture our Direct FuelCell products. In addition, to the extent the processes that our suppliers use to manufacture components are proprietary; we may be unable to obtain comparable components from alternative suppliers.

We do not know whether we will be able to maintain long-term supply relationships with our critical suppliers, or secure new long-term supply relationships, or whether such relationships will be on terms that will allow us to achieve our objectives. Our business prospects, results of operations and financial condition could be harmed if we fail to secure long-term relationships with entities that will supply the required components for our Direct FuelCell products.

We depend on our intellectual property, and our failure to protect that intellectual property could adversely affect our future growth and success.

Failure to protect our existing intellectual property rights may result in the loss of our exclusivity or the right to use our technologies. If we do not adequately ensure our freedom to use certain technology, we may have to pay others for rights to use their intellectual property, pay damages for infringement or misappropriation, or be enjoined from using such intellectual property. We rely on patent, trade secret, trademark and copyright law to protect our intellectual property. In addition, we have licensed our carbonate fuel cell manufacturing intellectual property to POSCO Energy, and we depend on POSCO Energy to also protect our intellectual property rights as licensed. At October 31, 2016, the Company, excluding its subsidiaries, had 90 current U.S. patents and 88 international patents covering our fuel cell technology. The U.S. patents have an average remaining life of approximately 9.9 years. Our subsidiary, Versa, has 33 current U.S. patents and 70 international patents covering their SOFC technology, with an average remaining U.S. patent life of approximately 7.3 years. In addition, our subsidiary, FuelCell Energy Solutions, GmbH, has a license to use 2 current U.S. patents and 27 international patents for carbonate fuel cell technology licensed from Fraunhofer IKTS.

Some of our intellectual property is not covered by any patent or patent application and includes trade secrets and other know-how that is not able to be patented, particularly as it relates to our manufacturing processes and engineering design. In addition, some of our intellectual property includes technologies and processes that may be similar to the patented technologies and processes of third parties. If we are found to be infringing third-party patents, we do not know whether we will be able to obtain licenses to use such patents on acceptable terms, if at all. Our patent position is subject to complex factual and legal issues that may give rise to uncertainty as to the validity, scope, and enforceability of a particular patent.

We cannot assure you that any of the U.S. or international patents owned by us or other patents that third parties license to us will not be invalidated, circumvented, challenged, rendered unenforceable or licensed to others, or any of our pending or future patent applications will be issued with the breadth of claim coverage sought by us, if issued at all. In addition, effective patent, trademark, copyright and trade secret protection may be unavailable, limited or not applied for in certain foreign countries.

We also seek to protect our proprietary intellectual property, including intellectual property that may not be patented or able to be patented, in part by confidentiality agreements and, if applicable, inventors' rights agreements with our subcontractors, vendors, suppliers, consultants, strategic partners and employees. We cannot assure you that these agreements will not be breached, that we will have adequate remedies for any breach or that such persons or institutions will not assert rights to intellectual property arising out of these relationships. Certain of our intellectual property have been licensed to us on a nonexclusive basis from third parties that may also license such intellectual property to others, including our competitors. If our licensors are found to be infringing third-party patents, we do not know whether we will be able to obtain licenses to use the intellectual property licensed to us on acceptable terms, if at all.

If necessary or desirable, we may seek extensions of existing licenses or further licenses under the patents or other intellectual property rights of others. However, we can give no assurances that we will obtain such extensions or further licenses or that the

terms of any offered licenses will be acceptable to us. The failure to obtain a license from a third party for intellectual property that we use at present could cause us to incur substantial liabilities, and to suspend the manufacture or shipment of products or our use of processes requiring the use of that intellectual property.

While we are not currently engaged in any intellectual property litigation, we could become subject to lawsuits in which it is alleged that we have infringed the intellectual property rights of others or commence lawsuits against others who we believe are infringing upon our rights. Our involvement in intellectual property litigation could result in significant expense to us, adversely affecting the development of sales of the challenged product or intellectual property and diverting the efforts of our technical and management personnel, whether or not that litigation is resolved in our favor.

Our future success will depend on our ability to attract and retain qualified management and technical personnel.

Our future success is substantially dependent on the continued services and on the performance of our executive officers and other key management, engineering, scientific, manufacturing and operating personnel, particularly Arthur Bottone, our Chief Executive Officer. The loss of the services of any executive officer, including Mr. Bottone, or other key management, engineering, scientific, manufacturing and operating personnel, could materially adversely affect our business. Our ability to achieve our commercialization plans will also depend on our ability to attract and retain additional qualified management and technical personnel. Recruiting personnel for the fuel cell industry is competitive. We do not know whether we will be able to attract or retain additional qualified management and technical personnel. Our inability to attract and retain additional qualified management and technical personnel, or the departure of key employees, could materially and adversely affect our development and commercialization plans and, therefore, our business prospects, results of operations and financial condition.

Our management may be unable to manage rapid growth effectively.

We may rapidly expand our facilities and manufacturing capabilities, accelerate the commercialization of our products and enter a period of rapid growth, which will place a significant strain on our senior management team and our financial and other resources. Any expansion may expose us to increased competition, greater overhead, marketing and support costs and other risks associated with the commercialization of a new product. We would need to obtain sufficient backlog in order to maintain the use of the expanded capacity. Our ability to manage rapid growth effectively will require us to continue to secure adequate sources of capital and financing, improve our operations, to improve our financial and management information systems and to train, motivate and manage our employees. Difficulties in effectively managing issues presented by such a rapid expansion could harm our business prospects, results of operations and financial condition.

We may be affected by environmental and other governmental regulation.

We are subject to various federal, state and local laws and regulations relating to, among other things, land use, safe working conditions, handling and disposal of hazardous and potentially hazardous substances and emissions of pollutants into the atmosphere. In addition, it is possible that industry-specific laws and regulations will be adopted covering matters such as transmission scheduling, distribution, and the characteristics and quality of our products, including installation and servicing. These regulations could limit the growth in the use of carbonate fuel cell products, decrease the acceptance of fuel cells as a commercial product and increase our costs and, therefore, the price of our products. Accordingly, compliance with existing or future laws and regulations could have a material adverse effect on our business prospects, results of operations and financial condition.

Utility companies may resist the adoption of distributed generation and could impose customer fees or interconnection requirements on our customers that could make our products less desirable.

Investor-owned utilities may resist adoption of distributed generation fuel cell plants as the power plants are disruptive to the utility business model that primarily utilizes large central generation power plants and associated transmission and distribution. On-site distributed generation that is on the customer-side of the electric meter competes with the utility. Distributed generation on the utility-side of the meter generally has power output that is significantly less than central generation power plants and may be perceived by the utility as too small to materially impact its business, limiting its interest. Additionally, perceived technology risk may limit utility interest in stationary fuel cell power plants.

Utility companies commonly charge fees to larger, industrial customers for disconnecting from the electric grid or for having the capacity to use power from the electric grid for back up purposes. These fees could increase the cost to our customers of using our Direct FuelCell products and could make our products less desirable, thereby harming our business prospects, results of operations and financial condition.

Several U.S. states have created and adopted, or are in the process of creating, their own interconnection regulations covering both technical and financial requirements for interconnection to utility grids. Depending on the complexities of the requirements,

installation of our systems may become burdened with additional costs that might have a negative impact on our ability to sell systems. The Institute of Electrical and Electronics Engineers has been working to create an interconnection standard addressing the technical requirements for distributed generation to interconnect to utility grids. Many parties are hopeful that this standard will be adopted nationally to help reduce the barriers to deployment of distributed generation such as fuel cells; however this standard may not be adopted nationally thereby limiting the commercial prospects and profitability of our fuel cell systems.

We could be liable for environmental damages resulting from our research, development or manufacturing operations.

Our business exposes us to the risk of harmful substances escaping into the environment, resulting in personal injury or loss of life, damage to or destruction of property, and natural resource damage. Depending on the nature of the claim, our current insurance policies may not adequately reimburse us for costs incurred in settling environmental damage claims, and in some instances, we may not be reimbursed at all. Our business is subject to numerous federal, state, and local laws and regulations that govern environmental protection and human health and safety. We believe that our businesses are operating in compliance in all material respects with applicable environmental laws, however these laws and regulations have changed frequently in the past and it is reasonable to expect additional and more stringent changes in the future.

Our operations may not comply with future laws and regulations and we may be required to make significant unanticipated capital and operating expenditures. If we fail to comply with applicable environmental laws and regulations, governmental authorities may seek to impose fines and penalties on us or to revoke or deny the issuance or renewal of operating permits and private parties may seek damages from us. Under those circumstances, we might be required to curtail or cease operations, conduct site remediation or other corrective action, or pay substantial damage claims.

Our products use inherently dangerous, flammable fuels, operate at high temperatures and use corrosive carbonate material, each of which could subject our business to product liability claims.

Our business exposes us to potential product liability claims that are inherent in products that use hydrogen. Our products utilize fuels such as natural gas and convert these fuels internally to hydrogen that is used by our products to generate electricity. The fuels we use are combustible and may be toxic. In addition, our Direct FuelCell products operate at high temperatures and use corrosive carbonate material, which could expose us to potential liability claims. Although we have incorporated a robust design and redundant safety features in our power plants and have established comprehensive safety, maintenance, and training programs in place, follow third-party certification protocols, codes and standards, and do not store natural gas or hydrogen at our power plants, we cannot guarantee that there will not be accidents. Any accidents involving our products or other hydrogen-using products could materially impede widespread market acceptance and demand for our products. In addition, we might be held responsible for damages beyond the scope of our insurance coverage. We also cannot predict whether we will be able to maintain adequate insurance coverage on acceptable terms.

We are subject to risks inherent in international operations.

Since we market our products both inside and outside the U.S., our success depends in part on our ability to secure international customers and our ability to manufacture products that meet foreign regulatory and commercial requirements in target markets. Sales to customers located outside the U.S. accounts for a significant portion of our consolidated revenue. Sales to customers in South Korea represent the majority of our international sales. We have limited experience developing and manufacturing our products to comply with the commercial and legal requirements of international markets. In addition, we are subject to tariff regulations and requirements for export licenses, particularly with respect to the export of some of our technologies. We face numerous challenges in our international expansion, including unexpected changes in regulatory requirements, potential conflicts or disputes that countries may have to deal with, fluctuations in currency exchange rates, longer accounts receivable requirements and collections, difficulties in managing international operations, potentially adverse tax consequences, restrictions on repatriation of earnings and the burdens of complying with a wide variety of international laws. Any of these factors could adversely affect our results of operations and financial condition.

Although our reporting currency is the U.S. dollar, we conduct our business and incur costs in the local currency of most countries in which we operate. As a result, we are subject to currency translation and transaction risk. Joint ventures or other business arrangements with strategic partners outside of the United States have and are expected in the future to involve investments denominated in the local currency. Changes in exchange rates between foreign currencies and the U.S. dollar could affect our net sales and cost of sales and could result in exchange gains or losses. We cannot accurately predict the impact of future exchange rate fluctuations on our results of operations.

We could also expand our business into new and emerging markets, many of which have an uncertain regulatory environment relating to currency policy. Conducting business in such markets could cause our exposure to changes in exchange rates to increase, due to the relatively high volatility associated with emerging market currencies and potentially longer payment terms for our proceeds. Our ability to hedge foreign currency exposure is dependent on our credit profile with financial institutions that are

willing and able to do business with us. Deterioration in our credit position or a significant tightening of the credit market conditions could limit our ability to hedge our foreign currency exposure; and therefore, result in exchange gains or losses.

We depend on relationships with strategic partners, and the terms and enforceability of many of these relationships are not certain.

We have entered into relationships with strategic partners for design, product development, sale and service of our existing products, and products under development, some of which may not have been documented by a definitive agreement. The terms and conditions of many of these agreements allow for termination by the partners. Termination of any of these agreements could adversely affect our ability to design, develop and distribute these products to the marketplace. We cannot assure you that we will be able to successfully negotiate and execute definitive agreements with any of these partners, and failure to do so may effectively terminate the relevant relationship.

If we fail to maintain an effective system of internal controls, we may not be able to accurately report our financial results or prevent fraud, which could harm our brand and operating results.

Effective internal controls are necessary for us to provide reliable and accurate financial reports and effectively prevent fraud. We have devoted significant resources and time to comply with the internal control over financial reporting requirements of the Sarbanes-Oxley Act of 2002. In addition, Section 404 under the Sarbanes-Oxley Act of 2002 requires that we assess, and that our auditors attest to, the design and operating effectiveness of our controls over financial reporting. Our compliance with the annual internal control report requirement for each fiscal year will depend on the effectiveness of our financial reporting and data systems and controls. Inferior internal controls could cause investors to lose confidence in our reported financial information, which could have a negative effect on the trading price of our stock and our access to capital.

Our results of operations could vary as a result of methods, estimates and judgments we use in applying our accounting policies.

The methods, estimates and judgments we use in applying our accounting policies have a significant impact on our results of operations (see "Critical Accounting Policies and Estimates" in Item 7). Such methods, estimates and judgments are, by their nature, subject to substantial risks, uncertainties and assumptions, and factors may arise over time that could lead us to reevaluate our methods, estimates and judgments.

In future periods, management will continue to reevaluate its estimates for contract margins, service agreements, loss accruals, warranty, performance guarantees, liquidated damages and inventory valuation allowances. Changes in those estimates and judgments could significantly affect our results of operations and financial condition. We may also adopt changes required by the Financial Accounting Standards Board and the Securities and Exchange Commission.

Our stock price has been and could remain volatile.

The market price for our common stock has been and may continue to be volatile and subject to extreme price and volume fluctuations in response to market and other factors, including the following, some of which are beyond our control:

- failure to meet commercialization milestones;
- failure to win contracts through competitive bidding processes;
- variations in our quarterly operating results from the expectations of securities analysts or investors;
- downward revisions in securities analysts' estimates or changes in general market conditions;
- changes in the securities analysts that cover us or failure to regularly publish reports;
- announcements of technological innovations or new products or services by us or our competitors;
- announcements by us or our competitors of significant acquisitions, strategic partnerships, joint ventures or capital commitments;
- additions or departures of key personnel;
- investor perception of our industry or our prospects;
- insider selling or buying;
- demand for our common stock;

- general technological or economic trends; and,
- changes in United States or foreign political environment and the passage of laws, including, tax, environmental or other laws, affecting the product development business.

In the past, following periods of volatility in the market price of their stock, many companies have been the subject of securities class action litigation. If we became involved in securities class action litigation in the future, it could result in substantial costs and diversion of management's attention and resources and could harm our stock price, business prospects, results of operations and financial condition.

Provisions of Delaware and Connecticut law and of our charter and by-laws and our outstanding securities may make a takeover more difficult.

Provisions in our certificate of incorporation and by-laws and in Delaware and Connecticut corporate law may make it difficult and expensive for a third-party to pursue a tender offer, change in control or takeover attempt that is opposed by our management and board of directors. In addition, certain provisions of our Series 1 Preferred Shares and our Series B preferred stock could make it more difficult or more expensive for a third party to acquire us. Public stockholders who might desire to participate in such a transaction may not have an opportunity to do so. These anti-takeover provisions could substantially impede the ability of public stockholders to benefit from a change in control or change in our management and board of directors.

Our amended and restated bylaws provide that the Court of Chancery of the State of Delaware is the exclusive forum for substantially all disputes between us and our stockholders, which could limit our stockholders' ability to obtain a judicial forum deemed favorable by the stockholder for disputes with us or our directors, officers or employees.

Our amended and restated bylaws provide that the Court of Chancery of the State of Delaware is the exclusive forum for any derivative action or proceeding brought on our behalf, any action asserting a breach of fiduciary duty, any action asserting a claim against us arising pursuant to the Delaware General Corporation Law, our certificate of incorporation or our amended and restated bylaws, any action to interpret, apply, enforce, or determine the validity of our amended and restated certificate of incorporation or restated bylaws, or any action asserting a claim against us that is governed by the internal affairs doctrine. The choice of forum provision may limit a stockholder's ability to bring a claim in a judicial forum that the stockholder finds favorable for disputes against us or our directors, officers or other employees, which may discourage such lawsuits against us and our directors, officers and other employees. Alternatively, if a court were to find the choice of forum provision contained in our restated bylaws to be inapplicable or unenforceable in an action, we may incur additional costs associated with resolving such action in other jurisdictions, which could adversely affect our business and financial condition.

Future sales of substantial amounts of our common stock could affect the market price of our common stock.

Future sales of substantial amounts of our common stock, or securities convertible or exchangeable into shares of our common stock, into the public market, including shares of our common stock issued upon exercise of options, or perceptions that those sales could occur, could adversely affect the prevailing market price of our common stock and our ability to raise capital in the future.

We may need to raise additional funds in future private or public offerings, and such funds may not be available on acceptable terms, if at all. If we do raise additional funds utilizing equity, existing stockholders will suffer dilution.

We may need to raise additional funds in private or public offerings, and these funds may not be available to us when we need them or on acceptable terms, if at all. If we raise additional funds through further issuances of our common stock, or securities convertible or exchangeable into shares of our common stock, into the public market, including shares of our common stock issued upon exercise of options, you could suffer significant dilution, and any new equity securities we issue could have rights, preferences and privileges superior to those of our then-existing capital stock. Any debt financing secured by us in the future could involve restrictive covenants relating to our capital raising activities and other financial and operational matters, which may make it more difficult for us to obtain additional capital and to pursue business opportunities. If we cannot raise additional funds when we need them, our business and prospects could fail or be materially and adversely affected.

The rights of the Series 1 preferred shares and Series B preferred stock could negatively impact our cash flows and could dilute the ownership interest of our stockholders.

The terms of the Series 1 preferred shares issued by FCE FuelCell Energy, Ltd. ("FCE Ltd."), our wholly-owned, indirect subsidiary, provide rights to the holder, Enbridge Inc. ("Enbridge"), which could negatively impact us.

The provisions of the Series 1 Preferred Shares require that FCE Ltd. make annual payments totaling Cdn. $1,250,000, including (i) annual dividend payments of Cdn. $500,000 and (ii) annual return of capital payments of Cdn. $750,000. These payments will end on December 31, 2020. Additional dividends accrue on cumulative unpaid dividends at a 1.25% quarterly rate, compounded quarterly, until payment thereof. On December 31, 2020 the amount of all accrued and unpaid dividends on the Series 1 Preferred Shares of Cdn. $21.1 million and the balance of the principal redemption price of Cdn. $4.4 million shall be paid to the holders of the Series 1 Preferred Shares. FCE Ltd. has the option of making dividend payments in the form of common stock or cash under the Series 1 Preferred Shares provisions.

We are also required to issue common stock to the holder of the Series 1 preferred shares if and when the holder exercises its conversion rights. The number of shares of common stock that we may issue upon conversion could be significant and dilutive to our existing stockholders. For example, assuming the holder of the Series 1 preferred shares exercises its conversion rights after July 31, 2020 and assuming our common stock price is $3.35 (our common stock closing price on October 31, 2016), and an exchange rate of U.S. $1.00 to Cdn. $1.34 at the time of conversion, we would be required to issue approximately 1,042,000 shares of our common stock.

The terms of the Series B preferred stock also provide rights to their holders that could negatively impact us. Holders of the Series B preferred stock are entitled to receive cumulative dividends at the rate of $50 per share per year, payable either in cash or in shares of our common stock. To the extent the dividend is paid in shares, additional issuances could be dilutive to our existing stockholders and the sale of those shares could have a negative impact on the price of our common stock. A share of our Series B preferred stock, after giving effect to the December 3, 2015 reverse stock split may be converted at any time, at the option of the holder, into 7.0922 shares of our common stock (which is equivalent to an initial conversion price of $141 per share), plus cash in lieu of fractional shares. Furthermore, the conversion rate applicable to the Series B preferred stock is subject to additional adjustment upon the occurrence of certain events.

Exports of certain of our products are subject to various export control regulations and may require a license or permission from the U.S. Department of State, the U.S. Department of Energy or other agencies.

As an exporter, we must comply with various laws and regulations relating to the export of products, services and technology from the U.S. and other countries having jurisdiction over our operations. We are subject to export control laws and regulations, including the International Traffic in Arms Regulation "ITAR", the Export Administration Regulation "EAR", and the Specially Designated Nationals and Blocked Persons List, which generally prohibit U.S. companies and their intermediaries from exporting certain products, importing materials or supplies, or otherwise doing business with restricted countries, businesses or individuals, and require companies to maintain certain policies and procedures to ensure compliance. We are also subject to the Foreign Corrupt Practices Act which prohibits improper payments to foreign governments and their officials by U.S. and other business entities. Under these laws and regulations, U.S. companies may be held liable for their actions and actions taken by their strategic or local partners or representatives. If we, or our intermediaries, fail to comply with the requirements of these laws and regulations, or similar laws of other countries, governmental authorities in the United States or elsewhere, as applicable, could seek to impose civil and/or criminal penalties, which could damage our reputation and have a material adverse effect on our business, financial condition and results of operations.

We are also subject to registration under the U.S. State Department's Directorate of Defense Trade Controls ("DDTC"). Due to the nature of certain of our products and technology, we must obtain licenses or authorizations from various U.S. Government agencies such as DDTC or DOE, before we are permitted to sell such products or license such technology outside of the U.S. We can give no assurance that we will continue to be successful in obtaining the necessary licenses or authorizations or that certain sales will not be prevented or delayed. Any significant impairment of our ability to sell products or license technology outside of the U.S. could negatively impact our results of operations, financial condition or liquidity.

APPENDIX IV – Pro Forma Assumptions and Cash Flows

[REDACTED]