

Committee on the Environment
April 11, 2016

Page 1

COUNCIL OF THE CITY OF PHILADELPHIA
COMMITTEE ON THE ENVIRONMENT

Room 400, City Hall
Philadelphia, Pennsylvania
Monday, April 11, 2016
1:30 p.m.

PRESENT:

COUNCILWOMAN BLONDELL REYNOLDS BROWN, CHAIR
COUNCILWOMAN CINDY BASS
COUNCILMAN DEREK S. GREEN
COUNCILWOMAN HELEN GYM
COUNCILMAN AL TAUBENBERGER

BILL 160110 - An ordinance amending Chapter 17-600 of The Philadelphia Code, entitled "Procurement Price Preferences," by adding a preference for alternatives to expanded polystyrene...

RESOLUTION 160211 - Resolution authorizing the Committee on the Environment to hold hearings to examine the Solar Schools for Philadelphia report released by PennEnvironment...

- - -

1
2 COUNCILWOMAN BROWN: Good
3 afternoon. Thank you for joining us here
4 in Philadelphia City Council Chambers.
5 Good morning to my colleagues and to
6 members of the City Council's Committee
7 on the Environment and to everyone here
8 who has stepped away from their desks to
9 engage in this conversation today.

10 I would be remiss not to offer
11 a very special thank you to the Office of
12 Sustainability and the Procurement
13 Department for all you've done to work
14 with my staff throughout this process on
15 this bill and so many others.

16 Joining us this afternoon are
17 Councilmembers Al Taubenberger,
18 Councilmember Helen Gym, Councilwoman
19 Cindy Bass, and Councilman Derek Green.

20 Bill No. 160110, co-sponsored
21 by my colleague Councilman Al
22 Taubenberger, puts forth a procurement
23 price preference. I'll restate that. A
24 procurement price preference in City
25 purchasing for alternatives to expanded

1 4/11/16 - ENVIRONMENT - BILL 160110/RES.160211

2 Styrofoam, more commonly known as
3 Styrofoam. This ordinance does not, does
4 not ban the purchasing of Styrofoam by
5 the City of Philadelphia. Instead, it
6 requires when quality and costs are
7 similar for the intended use, that
8 alternatives to Styrofoam be purchased.

9 Environmental hazards of
10 Styrofoam are well documented. Styrofoam
11 production in categories of energy
12 consumption, greenhouse gas effect, and
13 total environmental effects ranks only
14 second to aluminum. Furthermore,
15 Styrofoam is a principal component of
16 urban and marine debris and detrimental
17 to wildlife that ingests it. This
18 legislation not only moves the City in a
19 more sustainable direction, it also sends
20 a clear message that Philadelphia is
21 quite serious about protecting our
22 environment and taking tangible, concrete
23 steps to leverage our buying power in
24 achieving this goal.

25 If this legislation once

1 4/11/16 - ENVIRONMENT - BILL 160110/RES.160211

2 considered is passed today, Philadelphia
3 would not be a first, but Philadelphia
4 would join a growing number of cities,
5 including Seattle, Washington; Portland,
6 Oregon; Miami Beach, Florida; and
7 Washington, DC that have also already
8 enacted Styrofoam legislation.

9 Again, I want to thank my staff
10 and the Office of Sustainability, along
11 with the Procurement Department, for your
12 efforts towards this end.

13 I will now ask the Clerk to
14 read the title of the bill.

15 THE CLERK: Bill No. 160110, an
16 ordinance amending Chapter 17-600 of The
17 Philadelphia Code, entitled "Procurement
18 Price Preferences," by adding a
19 preference for alternatives to expanded
20 polystyrene, under certain terms and
21 conditions.

22 COUNCILWOMAN BROWN: Thank you
23 very, very much.

24 And so we would like to ask the
25 first panel, Trevor Day, Commissioner,

1 4/11/16 - ENVIRONMENT - BILL 160110/RES.160211

2 Office of Procurement, and Christine
3 Knapp, Director for the Office of
4 Sustainability to please proceed to the
5 panel. And they will be followed by
6 Panel No. 2, Edward Hazzouri on behalf of
7 Dart Container Corporation and Robert
8 Anderson, Mid-Atlantic Business
9 Development Manager for ReCommunity.

10 (Witnesses approached witness
11 table.)

12 COUNCILWOMAN BROWN: Good
13 afternoon. State your name for the
14 record and please proceed with your
15 testimony.

16 COMMISSIONER DAY: Hi. I'm
17 Trevor Day, Procurement Commissioner for
18 the City of Philadelphia.

19 COUNCILWOMAN BROWN: Pull your
20 mic closer to you so we can all hear you.

21 COMMISSIONER DAY: Trevor Day,
22 Procurement Commissioner for the City of
23 Philadelphia.

24 MS. KNAPP: Good morning --
25 good afternoon. Christine Knapp,

1 4/11/16 - ENVIRONMENT - BILL 160110/RES.160211

2 Sustainability Office.

3 COUNCILWOMAN BROWN: Very well.

4 Proceed.

5 COMMISSIONER DAY: Good

6 afternoon, Councilwoman Reynolds Brown

7 and members of the Committee on the

8 Environment. I am Trevor Day,

9 Commissioner for the City of

10 Philadelphia, and pleased to appear

11 before you today in support of Bill No.

12 160110 that sets a preference for

13 alternatives to polystyrene foam.

14 There's a growing 21st century

15 consensus that humanity is placing

16 excessive demands on available resources

17 through unsustainable consumption

18 patterns. The City of Philadelphia has

19 recognized the importance of

20 environmental impacts not only with the

21 creation of the Office of Sustainability

22 but with the goal of making Philadelphia

23 the greenest city in America.

24 With regard to polystyrene

25 foam, Procurement has already conducted a

1 4/11/16 - ENVIRONMENT - BILL 160110/RES.160211

2 review of our contracts. Fortunately,
3 the City minimally purchases polystyrene
4 foam through procurement contracts. We
5 will ensure that alternatives will be in
6 place, where cost effective, for
7 construction, concessions, and
8 commodities that are contracted by the
9 City. We are working in partnership with
10 the Office of Sustainability to review
11 our contract portfolio and strategically
12 implement the new sustainable policies
13 and procedures.

14 Green procurement offers
15 broader capacity to mitigate
16 over-exploitation of any and all scarce
17 resources. The Procurement Department
18 has made great strides in improving the
19 City's efforts to become more
20 sustainable. Environmental, health, and
21 safety concerns are increasingly being
22 integrated into strategic sourcing. Some
23 of the examples of these efforts include:

24 On our citywide public works
25 contracts, language is included in each

1 4/11/16 - ENVIRONMENT - BILL 160110/RES.160211

2 public works bid that every contractor
3 complies with the Executive Order 01-07
4 issued by Mayor Street that defines clean
5 diesel specifications for all
6 construction vehicles used on public
7 works projects. We work in partnership
8 with the Department of Health to enforce
9 this requirement. This, at a minimum,
10 results in 20 percent reduction of diesel
11 particulate emissions.

12 Additionally, on our citywide
13 office supplies contracts, the City
14 currently purchases all of its paper
15 contracts -- or paper as 30 percent
16 recycled content, and our toner contract
17 is 100 percent recycled. As a result of
18 the toner contract, 10 tons of plastic
19 and metal was not put in landfills. In
20 addition, 10,000 quarts of oil was
21 eliminated from landfills.

22 With regard to our citywide
23 auction services, Procurement has an
24 auction service that can be used to post
25 any unserviceable or surplus inventory at

1 4/11/16 - ENVIRONMENT - BILL 160110/RES.160211

2 municibid.com. The revenue generated
3 from these sales account for \$500,000 to
4 a million dollars annually.

5 Citywide inventory control, our
6 procurement unit of inventory control has
7 successfully sold end-of-the-life
8 vehicles, EKG machines, soap, street
9 poles, furniture, and heavy construction
10 equipment and office equipment just to
11 name a few items. We are currently
12 working with the departments that have
13 acute issues with storing surplus
14 property to assess and assist with any
15 surplus disposal in a way that is earth
16 friendly.

17 And we also work across
18 departments on redirecting citywide
19 waste. Procurement has contracts that
20 are used by many departments to not only
21 redirect waste from landfill but also to
22 generate revenue back to the City.
23 Procurement hold contracts to recycle
24 various metals and waste oil. The City
25 even recycles brass from used ammunition

1 4/11/16 - ENVIRONMENT - BILL 160110/RES.160211

2 collected at the Police Department firing
3 range.

4 In addition, the Procurement
5 Department is working collaboratively
6 with the Office of Sustainability to
7 further implement sustainable procurement
8 policies and procedures where the
9 employees of the City of Philadelphia can
10 widely adopt a planet-conscious
11 purchasing plan. In order to achieve
12 that strategy, the Procurement Department
13 will be taking the following two steps:

14 In FY17, Procurement will
15 create a purchase guideline as part of
16 our Procurement Manual that addresses
17 practices, products, services, and food
18 that reduce negative impacts on human
19 health and the environment.

20 In coordination with the Office
21 of Sustainability, we will create an
22 environmentally preferable purchasing
23 plan.

24 It is important that Council's
25 leadership foster an environment that

1 4/11/16 - ENVIRONMENT - BILL 160110/RES.160211

2 aims to use more sustainable purchasing
3 practices on a regular basis. We applaud
4 Councilwoman Reynolds Brown for
5 introducing Bill No. 160110 to reduce the
6 use of polystyrene as an example of that
7 leadership. The Procurement Department
8 fully supports the bill, and I greatly
9 appreciate the opportunity to speak with
10 you today in support of this effort.

11 Thank you.

12 COUNCILWOMAN BROWN: Thank you
13 for your testimony. I do have a few
14 questions, but we'll complete this panel
15 first.

16 Christine Knapp.

17 MS. KNAPP: Good afternoon.

18 Again, I'm Christine Knapp, Director of
19 the Office of Sustainability. Thank you,
20 Chairwoman Reynolds Brown and members of
21 the Committee, for the opportunity to
22 provide testimony before you on today's
23 Bill No. 160110.

24 The Office of Sustainability is
25 responsible for the implementation of

1 4/11/16 - ENVIRONMENT - BILL 160110/RES.160211

2 Greenworks Philadelphia, the City's
3 comprehensive sustainability plan. This
4 bill, which aims to reduce the amount of
5 expanded or extruded polystyrene,
6 otherwise known as EPS, purchased by the
7 City of Philadelphia aligns with several
8 Greenworks goals, including waste
9 diversion, improving air and water
10 quality, and greenhouse gas reductions.

11 I don't have to tell you about
12 EPS. It sounds like you've already
13 researched it well.

14 And while the City doesn't
15 directly purchase large quantities of
16 EPS, this bill is an important step
17 towards improving environmental quality
18 by encouraging City purchasers to find
19 EPS alternatives, a material that is not
20 recyclable in the City's waste stream.

21 EPS cannot be cost-effectively
22 recycled at scale and is not recycled at
23 the City's materials recovery facilities,
24 known as MRF; therefore, requires special
25 collection. The EPS industry markets its

1 4/11/16 - ENVIRONMENT - BILL 160110/RES.160211

2 product as recyclable. That is only
3 technically true in very specific and
4 limited ways. Given the current
5 challenges in recycling markets, it's
6 highly improbable that any facility in
7 the region would add EPS to its recycling
8 stream in the foreseeable future.

9 When not disposed of properly,
10 EPS can be a particularly harmful type of
11 pollution. When foam enters the
12 environment, it slowly degrades into
13 small particles known as microplastics.
14 These lead to hazardous accumulation of
15 non-biodegradable plastics in both land
16 and in water, where they can stick around
17 for centuries.

18 By asking departments to find
19 alternatives to EPS, the City would be
20 leading by example and asking our
21 municipal purchasing power to improve
22 environmental quality. Our office is
23 committed to working with the Procurement
24 Department and agencies citywide to
25 provide information on alternatives to

1 4/11/16 - ENVIRONMENT - BILL 160110/RES.160211

2 EPS, including paper and more rigid
3 plastics. This outreach would be in the
4 context of our much broader effort to
5 improve the environmental impact of all
6 goods and services purchased by the City.

7 The Office of Sustainability,
8 therefore, supports Bill No. 160110
9 because it is a smart and sensible step
10 to encourage the use of readily available
11 EPS alternatives.

12 Thank you for the opportunity
13 to testify, and I'd be happy to answer
14 any questions.

15 COUNCILWOMAN BROWN: Thank you
16 both as well.

17 Before passing the baton to my
18 colleagues, so what does it mean when you
19 say our office is committed to work with
20 the Procurement Department? Does that
21 mean you're meeting regularly, quarterly,
22 you're producing reports? What are you
23 doing?

24 MS. KNAPP: We've already been
25 meeting regularly since your hearing on

1 4/11/16 - ENVIRONMENT - BILL 160110/RES.160211

2 sustainable procurement. We've been
3 meeting regularly to work on a number of
4 the commitments that we made to you at
5 that time. We'll also be meeting with
6 other departments regarding their
7 purchasing since Procurement really sort
8 of plays a facilitating role for other
9 departments' needs. So we'll have to be
10 sure to help -- to bring other
11 departments into that conversation, which
12 we plan on doing.

13 COMMISSIONER DAY: And I think
14 our next meeting is scheduled for April
15 26th, I believe, and from that -- after
16 that meeting, we're going to be looking
17 at expanding the working group to
18 departments across the City.

19 COUNCILWOMAN BROWN: And so
20 what happens in those meetings? Do you
21 ask what you're doing? Do you ask how
22 you're doing? What's the dialogue?

23 COMMISSIONER DAY: So we've
24 created a plan to look at -- analyze the
25 contracting portfolio that the City has

1 4/11/16 - ENVIRONMENT - BILL 160110/RES.160211

2 and looking at the commodities where we
3 are not -- where we could be purchasing
4 more sustainably.

5 COUNCILWOMAN BROWN: And, what,
6 then you make recommendations or
7 suggestions?

8 COMMISSIONER DAY: Yes. So we
9 can make recommendations to departments
10 across the City, and then Procurement can
11 sort of review those requests that come
12 from the departments and sort of
13 encourage them to seek alternatives in
14 ways that they purchased in the past.

15 COUNCILWOMAN BROWN: So then
16 where is the -- is there an expectation?
17 You can make recommendations, which don't
18 have to be followed. So where is the
19 urge or the enforcement or the nudge to
20 say do this?

21 COMMISSIONER DAY: And I think
22 that's part of our dialogue right now.

23 COUNCILWOMAN BROWN: So when do
24 you expect to produce a plan on -- second
25 page of your testimony you talk about two

1 4/11/16 - ENVIRONMENT - BILL 160110/RES.160211

2 major steps you intend to execute. When
3 do you see a written plan?

4 COMMISSIONER DAY: I think
5 probably the first -- or the third or
6 fourth quarter of FY17. We're creating a
7 procurement manual, which is not going to
8 be done until after we've rolled out our
9 new E-procurement system. So once we
10 have that system up and running, we're
11 going to create a manual, and part of
12 that manual is going to be the
13 sustainable procurement.

14 MS. KNAPP: Two things that are
15 happening more immediately is, we're
16 hiring a grad student this summer as an
17 intern to do research for us and sort of
18 map out these different procurement
19 processes and really identify where
20 there's contract opportunities. And I
21 think I mentioned to you at the
22 sustainable procurement hearing that
23 we're part of an Urban Sustainability
24 Directors Network that's been pulling
25 together a compendium of best practices

1 4/11/16 - ENVIRONMENT - BILL 160110/RES.160211

2 regarding procurement, and that should be
3 out this summer as well at some point.
4 So once we have that, that should also
5 give us potential ideas that we might
6 want to implement here.

7 COUNCILWOMAN BROWN: So the
8 research might include how other cities
9 are already doing this?

10 MS. KNAPP: Right.

11 COUNCILWOMAN BROWN: Very well.
12 Questions from members of the
13 Committee?

14 Councilman.

15 COUNCILMAN TAUBENBERGER: Yes.
16 In the bill we have the Procurement
17 Department shall whenever the price is
18 reasonably competitive. Your definition,
19 so I understand it as someone who is
20 crafting this bill and is actually a
21 co-sponsor to it, what's your definition
22 of reasonably competitive?

23 COMMISSIONER DAY: I think
24 that's a case-by-case basis, but I would
25 say probably within a 10 percent, 15

1 4/11/16 - ENVIRONMENT - BILL 160110/RES.160211

2 percent, maybe 20 percent cost, something
3 like that.

4 COUNCILMAN TAUBENBERGER:

5 Twenty percent gets high. Even 10 can be
6 competitive on a -- very, very
7 competitive. Let me be very direct here.
8 Would you be -- would you feel better if
9 there were a number associated as opposed
10 to reasonably competitive?

11 COMMISSIONER DAY: I think

12 reasonably competitive creates some
13 ability to be a little bit flexible in
14 sort of making decisions along with the
15 Office of Sustainability.

16 COUNCILMAN TAUBENBERGER: Okay.

17 Although to be very direct again, a 10
18 percent and a 20 percent margin is quite
19 a bit of leeway.

20 COMMISSIONER DAY: Yes.

21 COUNCILMAN TAUBENBERGER: Okay.

22 COUNCILWOMAN BROWN: So how are

23 decisions -- given that important
24 question, how are decisions ultimately
25 rendered on a matter like this within the

1 4/11/16 - ENVIRONMENT - BILL 160110/RES.160211

2 department?

3 COMMISSIONER DAY: I think -- I
4 mean, the matter is really going to be
5 decided probably before we put the
6 opportunity out in how we craft the bid.
7 So if we're going to be looking at, let's
8 just say paper, you gave the example last
9 time we met about paper going from 30
10 percent to 100 percent recycled. In
11 conversations with the Office of
12 Sustainability if we find out that
13 there's really -- the market sort of
14 bears 100 percent or 80 percent recycled
15 or 100 percent recycled, we'll put the
16 bid out with 100 percent recycled as a
17 requirement. We're not even going to ask
18 for the 30 percent. Or if we don't know
19 what the market is going to bear, we may
20 put out both within the bid and say we're
21 going to require 30 percent and 100, and
22 then we'll look at the pricing when the
23 bids come back.

24 COUNCILWOMAN BROWN: So if we
25 want to dig deeper with regards to those

1 4/11/16 - ENVIRONMENT - BILL 160110/RES.160211

2 who do business at the airport, and
3 particularly the food court, how would
4 that happen? Would the stipulation be
5 passed to the airport leadership, who
6 would then have to drill down to ensure
7 that the vendors there are complying?
8 How would that happen?

9 COMMISSIONER DAY: Yes. That's
10 correct. So the MarketPlace in the
11 airport is a contract that's owned and
12 managed by the airport, and they would be
13 responsible for managing the requirement
14 under that contract.

15 COUNCILWOMAN BROWN: The
16 airport leadership would be responsible
17 for making sure the MarketPlace is in
18 compliance?

19 COMMISSIONER DAY: Yes. So
20 part of this procurement manual and
21 recommendations that come out of the
22 working group will make those
23 recommendations.

24 COUNCILWOMAN BROWN: Okay,
25 then. Thank you very much.

1 4/11/16 - ENVIRONMENT - BILL 160110/RES.160211

2 Anyone else, members of the
3 Committee?

4 Councilwoman Bass and then back
5 to Councilman Taubenberger.

6 COUNCILWOMAN BASS: Thank you.

7 I just have one quick question.
8 It's hard for me to get a sense of how
9 much Styrofoam we're actually consuming
10 as a city. It's really hard to get a
11 sense. I know it says in here that it's
12 minimal, but that doesn't really give me
13 a sense when I have no idea what
14 "minimal" could mean for a city as large
15 as the City of Philadelphia.

16 COMMISSIONER DAY: Sure. So
17 when we took a look at this, we found one
18 commodity off of a citywide contract that
19 had polystyrene foam.

20 COUNCILWOMAN BROWN: You found
21 one?

22 COMMISSIONER DAY: One.
23 However, that sort of understates, I
24 think, what the purchasing -- how the
25 purchasing is done across the City.

1 4/11/16 - ENVIRONMENT - BILL 160110/RES.160211

2 There are other contracts that do not
3 specify -- so the MarketPlace at the
4 airport is a good example. We have a
5 contract in place. There's no tracking
6 of -- they contracted for that service,
7 and there's no way for the City of
8 Philadelphia Procurement Department or
9 the Office of Sustainability to measure
10 that, because we don't track it. So that
11 tells you what it tells you.

12 MS. KNAPP: And in small
13 amounts, I think we've also understood
14 that if someone goes and purchases
15 supplies for a meeting and they purchase
16 plates, right, because they have some
17 sort of food, they could buy paper
18 plates, they could buy Styrofoam plates.
19 We don't really know because they'll just
20 submit -- it says petty cash or a small
21 amount of reimbursement, so we wouldn't
22 know what kind of plates were purchased.

23 COUNCILWOMAN BASS: Okay. All
24 right. Well, thank you.

25 COUNCILWOMAN BROWN:

1 4/11/16 - ENVIRONMENT - BILL 160110/RES.160211

2 Councilman.

3 COUNCILMAN TAUBENBERGER: Yes.

4 To the best of your knowledge -- I know
5 it's not your department, and I think you
6 may have testified about it, but the fact
7 is Styrofoam at this moment not a
8 recycled product curbside?

9 MS. KNAPP: At the curbside,
10 no. There is a facility -- I believe
11 it's in the Northeast actually -- that
12 does accept it if you drop it off. So an
13 individual at their home or their
14 business could decide to collect it and
15 then drive it up there or take it in.
16 But at curbside it is not currently
17 recyclable.

18 COUNCILMAN TAUBENBERGER: Would
19 that at some point be in your purview to
20 recommend or not recommend that be picked
21 up on curbside?

22 MS. KNAPP: I mean, we always
23 can renew the sort of markets and see
24 what products. As you know, over the
25 years, there have been additions to sort

1 4/11/16 - ENVIRONMENT - BILL 160110/RES.160211

2 of --

3 COUNCILWOMAN BROWN: Pull the
4 mic closer. It's difficult hearing you.

5 MS. KNAPP: I'm sorry.

6 We could certainly make
7 recommendations and look into other
8 products that make sense to have
9 collected at the curbside. I think over
10 the last few years we all know we used to
11 only be able to recycle certain types of
12 plastics and now we can recycle more.
13 That's really a discussion that should be
14 had with the MRF, and I think you'll
15 actually hear from somebody from the MRF
16 who will be testifying after me.

17 Basically it all comes down to
18 what's marketable, what you can sell on
19 the marketplace. And the recycling
20 commodities market has taken a major hit
21 in the last several years. So I think
22 it's probably financially unfeasible to
23 add Styrofoam into the curbside
24 collection right now, but I'll let Bob
25 Anderson, who is the expert on those

1 4/11/16 - ENVIRONMENT - BILL 160110/RES.160211

2 numbers, provide them to you when he
3 testifies.

4 COUNCILMAN TAUBENBERGER: Thank
5 you.

6 COUNCILWOMAN BROWN: Councilman
7 Green.

8 COUNCILMAN GREEN: Thank you,
9 Madam Chair.

10 So what would be the process
11 trying to evaluate if we want to expand
12 recycling to EPS and other types of
13 products?

14 MS. KNAPP: I think the same
15 answer. I think there's a bit of an
16 economic evaluation. If you have to
17 send -- you know, if you have to do
18 additional trips to accommodate
19 additional material and that's more gas
20 and more man hours, you know, to then not
21 make money back, you could be losing
22 money. And so I think there's sort of an
23 evaluation you have to do to see is this
24 particular commodity marketable or not
25 and then make the decision from there.

1 4/11/16 - ENVIRONMENT - BILL 160110/RES.160211

2 COUNCILMAN GREEN: And would
3 that timing analysis also -- well, let me
4 step back.

5 Would that analysis also be
6 based on different times of the year?
7 Because I would think that during maybe
8 the holiday season, there may be more of
9 a demand for recycling those types of
10 products versus --

11 MS. KNAPP: Generally -- and
12 I'm stepping into an area that I'm not an
13 expert in, because our Streets Department
14 Sanitation Division certainly has more of
15 the experts on how they set up these
16 programs, but from my understanding, I
17 don't think there's ever been a
18 seasonal-based commodity acceptance
19 program, other than sort of leaf
20 collection, which occasionally happens
21 during certain times of the year. In
22 terms of the curbside collection of what
23 goes to our recycling facility, I don't
24 believe there's ever been a seasonal
25 program, I think in part because

1 4/11/16 - ENVIRONMENT - BILL 160110/RES.160211

2 education-wise it would probably just be
3 too difficult to tell people when they
4 can and can't be recycling something.

5 COUNCILMAN GREEN: Okay.

6 COUNCILWOMAN BROWN: What kind
7 of public awareness activities, programs,
8 initiatives are in place to tell the 1.5
9 million people of Philadelphia that there
10 actually is a Styrofoam recycling place
11 up in the Greater Northeast?

12 MS. KNAPP: I don't know of any
13 in particular. I did not know that
14 myself until we were preparing for this
15 hearing. So I don't know that there is a
16 lot of promotion that's being done around
17 that, but that's something we can
18 certainly talk to the Streets Department
19 and the Sanitation Division about to see
20 if they have any plans to do that.

21 COUNCILWOMAN BROWN: Any other
22 questions?

23 Please.

24 COUNCILMAN TAUBENBERGER: Madam
25 Chair.

1 4/11/16 - ENVIRONMENT - BILL 160110/RES.160211

2 By chance, would you happen to
3 know the name of that recyclable?

4 MS. KNAPP: I don't. I don't,
5 but we will get that to you.

6 COUNCILMAN TAUBENBERGER: I'd
7 like that, if that could be shared with
8 the Committee.

9 COUNCILWOMAN BROWN: Well,
10 thank you very, very much for your
11 testimony.

12 COUNCILMAN GREEN: Madam Chair.

13 COUNCILWOMAN BROWN: Forgive
14 me. Councilman Green.

15 COUNCILMAN GREEN: I just
16 wanted to follow up with the Acting
17 Procurement Commissioner. I'm not sure
18 if I heard this earlier. Are there
19 initiatives in other cities in reference
20 to EPS and procurement that you're aware
21 of?

22 COMMISSIONER DAY: I am not
23 aware of them, but we can certainly look
24 into that and get back to you.

25 COUNCILMAN GREEN: I'm just

1 4/11/16 - ENVIRONMENT - BILL 160110/RES.160211

2 curious to see if there's any other
3 initiatives, and that kind of ties back
4 into some of the questions that other
5 members of Council made earlier.

6 COMMISSIONER DAY: Absolutely.

7 COUNCILWOMAN BROWN: So we do
8 what's called follow-up on this Committee
9 and we actually do ticklers in the office
10 when folks say they're going to promise
11 us a document. So is it fair to say that
12 September 2017 is when we can anticipate
13 the plan that you two referenced? Is
14 that reasonable, September 2017?

15 COMMISSIONER DAY: The third
16 and fourth quarter of FY17 starts in
17 January of 2018 and goes through June of
18 2018.

19 COUNCILWOMAN BROWN: Okay. All
20 right. So at the latest, it would be
21 June 2018?

22 COMMISSIONER DAY: Yes. That's
23 correct.

24 COUNCILWOMAN BROWN: And the
25 questions that have been raised by

1 4/11/16 - ENVIRONMENT - BILL 160110/RES.160211

2 members where you said "I'll get back to
3 you," make sure it's reflected in that
4 document.

5 COMMISSIONER DAY: Absolutely.

6 COUNCILWOMAN BROWN: Okay. All
7 right, then. Thank you very much for
8 your testimony.

9 MS. KNAPP: Thank you.

10 COUNCILWOMAN BROWN: We would
11 now like to invite up Panel No. 2, Edward
12 Hazzouri on behalf of Dart Container
13 Corporation, please, and Robert Anderson
14 of the Mid-Atlantic Business Development
15 Manager for ReCommunity.

16 (Witnesses approached witness
17 table.)

18 COUNCILWOMAN BROWN: Good
19 afternoon, gentlemen. Please state your
20 name for the record and proceed with your
21 testimony. Please pull your microphone
22 closer to you.

23 MR. HAZZOURI: Councilwoman,
24 good afternoon. Ed Hazzouri representing
25 Dart Container Corporation. Dart is a

1 4/11/16 - ENVIRONMENT - BILL 160110/RES.160211

2 U.S. company, but they manufacture all
3 over the world. However, they have --
4 their largest facility is just 75 miles
5 away in Lancaster County where they've
6 got over 1,200 or 1,300 employees, and
7 they make a lot of the products which
8 we're talking about. They make the foam
9 cups, but they also make the rigid kind
10 of the red Solo cup that folks know.
11 They also make the paper cups that you'll
12 have hot drinks in, which aren't exactly
13 paper cups. They're lined, as you know,
14 with a plastic in order to be able to
15 withstand that heat.

16 I'd like to just touch on a
17 couple of points I will make. The first,
18 I think it was a question by Councilman
19 Taubenberger, up in the North or
20 Northeast part of the City where you can
21 drop off your polystyrene. The dumpster
22 and the things there are actually
23 provided by Dart to the City at no
24 charge, and then the Streets Department
25 calls Dart when those containers are

1 4/11/16 - ENVIRONMENT - BILL 160110/RES.160211

2 full. They come from Lancaster, pick
3 them up, and then recycle them up there.
4 Those materials -- and I should also say
5 they don't just pick up their own
6 products. They only make food
7 containers. But anything. If you've got
8 a computer packed in Styrofoam, they will
9 take anything at all and recycle that.
10 That's turned into small pellets, which
11 then are used no longer to make any food
12 products but to make packaging, that sort
13 of thing.

14 There are a couple of things
15 that are interesting when you take a look
16 specifically at the products. The foam
17 cup that we all know, it's actually very
18 little actual product itself,
19 polystyrene. It's 90 percent air, and
20 it's that air that gives it the ability
21 to insulate, whether to keep things cold
22 or to keep things warm.

23 When you move to the paper cup
24 lined in plastic, that's when you begin
25 to see the sleeves that you'll see at

1 4/11/16 - ENVIRONMENT - BILL 160110/RES.160211

2 coffee shops, the cardboard sleeves, or
3 double cupping, that sort of thing. So
4 it ends up increasing the cost quite a
5 bit. The paper cups are at least double
6 the manufacture costs, plus they're
7 heavier to transport. So you have a lot
8 of advantages to the foam containers. In
9 addition, as we said, the foam is 100
10 percent recyclable. Dart has been
11 recycling since 1990 and recycling here
12 in Philadelphia for the last few years.
13 They've also done some other interesting
14 projects down in South Philadelphia in
15 Councilman Johnson's district. They did
16 a holiday collection where the neighbors,
17 the neighborhood associations put out
18 information to the citizens. They then
19 all brought everything on a certain date.
20 Dart was there with trucks and just took
21 it right away. They've also done it at
22 universities. They'll put collection
23 bins at corporate campuses. Wherever the
24 need is and the volume is there, they're
25 happy to go in. They don't charge for

1 4/11/16 - ENVIRONMENT - BILL 160110/RES.160211

2 any of this. It's part of their
3 stewardship of their product and other
4 folks who make different products in the
5 foam family.

6 Just to touch on a couple of
7 other things, you had asked about current
8 curbside recycling in the United States.
9 It is done at this point in Los Angeles
10 and in Sacramento, California. Certainly
11 Los Angeles is much larger and I would
12 guess logistically just as difficult as
13 Philadelphia. It goes into the regular
14 waste stream there and then taken apart.

15 Dart has an internal program
16 where they're more than happy to come
17 out, help folks, help cities to try to
18 implement this. They were here last
19 summer, met with actually folks in the
20 Streets Department. In addition, met
21 with folks from now Mayor Kenney's staff
22 and talked about it and expressed their
23 willingness to come, and in fact, they
24 would certainly encourage a recycling
25 bill. Let's do it here in Philadelphia.

1 4/11/16 - ENVIRONMENT - BILL 160110/RES.160211

2 Let's become the first East Coast city to
3 have mandatory curbside recycling.

4 I don't want to go on too far.
5 We can take some questions.

6 COUNCILWOMAN BROWN: Okay,
7 then. We'll rest it there and hear from
8 our other witness, Robert Anderson.

9 MR. ANDERSON: Yeah. My name
10 is Robert Anderson. I'm with ReCommunity
11 Recycling. ReCommunity is one of the
12 largest pure-play recycling companies in
13 the country. We have 30 facilities in 14
14 states. We've had the City of
15 Philadelphia contract under the current
16 cycle for about two and a half years, but
17 prior to that, we had the contract for
18 about 12 years before the interim
19 contract.

20 We're here to testify in favor
21 of the bill. You know, recycling is
22 under extreme pressure. Market
23 conditions are extremely challenging, and
24 one of the things that we're really
25 looking forward towards and one of the

1 4/11/16 - ENVIRONMENT - BILL 160110/RES.160211

2 initiatives that the City has worked
3 diligently on is mitigating the amount of
4 contamination that's put at the curbside
5 stream. And so this bill would help to
6 mitigate and close that portal for
7 potential contamination of the stream,
8 which then devalues the material.

9 The challenges that we have in
10 trying to separate this material curbside
11 is, we use geometry and physics in order
12 to break the material down into
13 individual components. The expanded
14 polystyrene is very light weight, so it
15 doesn't react like the other containers
16 that are in the stream. And so in most
17 situations, it would act like a
18 two-dimensional piece of material and it
19 would follow the paper, and then it would
20 become a contaminant in the paper.

21 I'm not familiar with the
22 curbside programs that have been
23 referenced in terms of Los Angeles or
24 Sacramento. I just know as a company
25 it's been extremely difficult for us to

1 4/11/16 - ENVIRONMENT - BILL 160110/RES.160211

2 appreciate how we could have a system
3 that's constructed in order to be able to
4 extract that material. So the main value
5 for us is, we're really looking to get
6 back to basics and harvest the materials
7 that are in the stream. Let's work
8 towards maximizing the amount of PET
9 that's collected, the amount of HD, the
10 amount of paper, the amount of
11 corrugated, stick with the solid basics
12 of recycling programs and let's maximize
13 those and extract as much value as we can
14 rather than trying to expand the spectrum
15 of what it is that we would want to
16 attempt to do curbside.

17 In reference to what's been
18 done in the drop-offs, most of the
19 expanded polystyrene programs that I'm
20 familiar with are drop-off. And we have
21 no exception to a drop-off center. Our
22 sole exception is at curbside.

23 We do have a Styrofoam
24 recycling program in New Jersey for one
25 of our smaller commercial firms. That

1 4/11/16 - ENVIRONMENT - BILL 160110/RES.160211

2 takes solely pre-consumer industrial-type
3 materials, and it doesn't do anything
4 curbside or doesn't take any plates or
5 cups or anything like that we're
6 referencing here. It only takes, you
7 know, the Home Depot or the Best Buy
8 packaging and -- pre-consumer packaging
9 is really what we're taking.

10 COUNCILWOMAN BROWN: That's
11 been very informative.

12 Mr. Anderson, given that this
13 is the business you're in, would it make
14 sense to have one of the bins that's up
15 at the Northeast out at the airport?

16 MR. ANDERSON: I would think
17 that as you maximize the potential for
18 drop-off, you're going to maximize the
19 potential for recovery. We wouldn't have
20 any capacity at our facility for public
21 drop-off. The trucks -- the amount of
22 truck traffic would just be way too
23 hazardous to try to insert any residents
24 into that situation, but I'm sure that
25 there are locations that could

1 4/11/16 - ENVIRONMENT - BILL 160110/RES.160211

2 potentially become available for added.

3 COUNCILWOMAN BROWN: Ed

4 Hazzouri, did you tell me that the -- my
5 notes here aren't clear -- that the
6 drop-off container in the Greatest
7 Northeast, is that a Dart operation up
8 there?

9 MR. HAZZOURI: Yeah. What

10 happened a couple of years ago was, we
11 sat with the Streets Department when
12 Clarena Tolson was in charge, and they
13 had agreed that it made sense, and Dart
14 contributed the container and then they
15 come and pick up as the City calls. It's
16 no charge to the City at all.

17 COUNCILWOMAN BROWN: I see.

18 Okay. Well, do you have any additional
19 recommendations to the City, to us on how
20 and what we can do better when it comes
21 to recycling given your expertise, either
22 one or the both of you?

23 MR. ANDERSON: Well, I would

24 just congratulate the Streets Department
25 and the effort that they've made over the

1 4/11/16 - ENVIRONMENT - BILL 160110/RES.160211

2 last 18 months of our current contract in
3 assuring that they're picking up the
4 commodities that we're looking for. It's
5 been a real dramatic change. And what we
6 do is, we provide the Streets Department
7 with feedback, pictures of loads that are
8 problematic, and then they address each
9 one of those loads with the crews. And
10 so when we started the program, we were
11 having probably, you know, as many as six
12 a day of problem deliveries, and now we
13 have maybe three to five a month. So
14 it's been --

15 COUNCILWOMAN BROWN: That's
16 progress.

17 MR. ANDERSON: It's pretty
18 remarkable. I definitely would pat the
19 Streets Department on the back for their
20 efforts over the last 18 months. It's
21 been pretty dramatic.

22 COUNCILWOMAN BROWN: We must
23 certainly remember to do that when they
24 come before us for budget testimony. You
25 have to lift up departments when they're

1 4/11/16 - ENVIRONMENT - BILL 160110/RES.160211

2 doing well --

3 MR. ANDERSON: Right.

4 COUNCILWOMAN BROWN: -- as

5 well.

6 Well, thank you.

7 MR. ANDERSON: They catch a lot
8 of flack out there.

9 COUNCILWOMAN BROWN: That's why
10 we have to lift departments up when they
11 do well. It's important.

12 Well, thank you for your
13 testimony.

14 Ed Hazzouri, any other
15 comments, observations you care to make?

16 MR. HAZZOURI: To your point
17 about putting another container in the
18 City, I have to agree. I'm not sure if
19 the airport works, doesn't work, but I
20 would guess Dart would be very interested
21 in a conversation if Streets has a
22 location where they think they would be
23 able to collect enough material for it to
24 make sense.

25 COUNCILWOMAN BROWN: For it to

1 4/11/16 - ENVIRONMENT - BILL 160110/RES.160211

2 make sense, yes.

3 Okay, then. Well, that's a
4 note for follow-up as well.

5 Thank you both, gentlemen.

6 MR. ANDERSON: Thank you for
7 your time.

8 MR. HAZZOURI: Thank you.

9 COUNCILWOMAN BROWN: You're
10 welcome. You're welcome.

11 Take a three-minute rest. I
12 just want to recapture some members that
13 are close by, but we can't move to a
14 meeting without the presence of members.

15 (Brief pause.)

16 COUNCILWOMAN BROWN: So we're
17 going to be respectful of your time and
18 move on with the resolution, and we will
19 move to vote on the bill once we have a
20 quorum that has returned with us. So
21 let's just move to the first panel that
22 will speak on the resolution, and before
23 we do that, I want to ask the sponsor of
24 the resolution to please provide us with
25 remarks.

1 4/11/16 - ENVIRONMENT - BILL 160110/RES.160211

2 COUNCILMAN GREEN: Thank you,
3 Madam Chair.

4 This opportunity and this
5 conversation regarding solar panels on
6 School District property I think is very
7 interesting. Just last week we had a
8 conversation regarding the boiler
9 explosion at Edmonds Elementary School in
10 the 9th Council District, as well as the
11 Locke School in the 3rd Council District,
12 which had an HVAC issue. And as many of
13 you in the audience know and others know,
14 that we have an inequitable funding
15 formula for the School District. So
16 we're constantly talking about how do we
17 bring in additional revenue. But on the
18 other side of the ledger, we also need to
19 look at ways that we can reduce expenses
20 for our schools. And over the course of
21 a number of months, actually going back
22 to the summer, learned that a number of
23 schools, about 4,000 schools across the
24 country, are using solar panels as a way
25 of reducing expenses.

1 4/11/16 - ENVIRONMENT - BILL 160110/RES.160211

2 In the Commonwealth of
3 Pennsylvania, we have about 41 schools
4 that are using solar panels, and we
5 actually have three schools in the City
6 of Philadelphia using solar panels as a
7 way of reducing energy costs, that being
8 A. Philip Randolph, Springside Chestnut
9 Hill Academy, as well as Albert M.
10 Greenfield School.

11 So this provides an opportunity
12 to continue that conversation. We know a
13 number of schools in the City of
14 Philadelphia, special schools like
15 Northeast High School, which probably has
16 about 133,000 of usable rooftop space for
17 possible solar panels, I know this is an
18 initiative that the School District has
19 been looking at and doing their own study
20 and research. They will not be providing
21 testimony today, but they are here to
22 listen to the conversation, to continue
23 their analysis as we continue to look at
24 creative ways to make sure that we
25 provide all the best resources and needs

1 4/11/16 - ENVIRONMENT - BILL 160110/RES.160211

2 for the children in the City of
3 Philadelphia. We often look at the
4 revenue side, but we also should look at
5 the expense side as a way of providing
6 additional resources for the School
7 District.

8 COUNCILWOMAN BROWN: For that,
9 I commend you, Councilman.

10 COUNCILMAN GREEN: Thank you.

11 COUNCILWOMAN BROWN: That's
12 truly moving to make Philadelphia greener
13 in a substantial way.

14 Let's please ask our first
15 panel to report to the witness table:
16 Christine Knapp, Director of the Office
17 of Sustainability; Amanda Byrne, Energy
18 Analyst for the City of Philadelphia; and
19 Adam Agalloco -- and I need you to
20 re-pronounce your last name for me so I
21 get it right -- also Energy Manager for
22 the City of Philadelphia.

23 And I would like to ask the
24 Clerk to read the title of the bill.
25 Thank you.

1 4/11/16 - ENVIRONMENT - BILL 160110/RES.160211

2 THE CLERK: Resolution 160211,
3 resolution authorizing the Committee on
4 the Environment to hold hearings to
5 examine the Solar Schools for
6 Philadelphia report lease by
7 PennEnvironment Research & Policy Center
8 and Frontier Group, and to investigate
9 financing options for the School District
10 of Philadelphia to use its land and
11 building stock for solar energy
12 generation.

13 (Witnesses approached witness
14 table.)

15 COUNCILWOMAN BROWN: Good
16 afternoon. Proceed.

17 MS. KNAPP: I'm Christine
18 Knapp, Director of the Office of
19 Sustainability. I'm joined with two of
20 my colleagues, Adam Agalloco, the Energy
21 Manager of the Office of Sustainability,
22 and Amanda Byrne, Energy Analyst in the
23 Energy Office.

24 The Office of Sustainability is
25 responsible for Greenworks Philadelphia,

1 4/11/16 - ENVIRONMENT - BILL 160110/RES.160211

2 the City's comprehensive sustainability
3 plan, one of the goals of which is to
4 increase alternative energy use within
5 Philadelphia, including the adoption of
6 solar energy.

7 Our office has no operational
8 role in the School District facilities.
9 However, we are happy to share our
10 experience. We have worked closely with
11 the School District on the development of
12 their sustainability plan, which is
13 modeled after Greenworks, and we will
14 continue to assist them in any way that
15 we can.

16 My testimony today will be
17 divided into three sections. One will be
18 a summary of what the City has done to
19 promote solar, streamline City processes
20 related to solar power, and to lower its
21 costs. Two, an overview of current solar
22 market conditions in Pennsylvania. And,
23 three, options for solar on government
24 facilities.

25 On the City's solar efforts

1 4/11/16 - ENVIRONMENT - BILL 160110/RES.160211

2 thus far, in 2008 Philadelphia was named
3 a Solar America City, a U.S. Department
4 of Energy project that works with
5 municipalities to remove regulatory
6 barriers and reduce soft costs of solar
7 development. With funding from this
8 project, the Office of Sustainability
9 worked with industry stakeholders to
10 develop a guidebook for solar developers
11 outlining a streamlined permitting
12 process for new projects.

13 In 2012, we worked with City
14 Council to pass legislation that
15 significantly reduced the cost of solar
16 permitting by excluding the cost of solar
17 panels and inverters and calculating
18 fees. The City continues to work with
19 solar developers and PECO to ensure that
20 existing policies and processes are up to
21 date and is currently pursuing a SPARC
22 designation -- SPARC stands for Solar
23 Powering America by Recognizing
24 Communities -- through the Department of
25 Energy. This is an information-sharing

1 4/11/16 - ENVIRONMENT - BILL 160110/RES.160211

2 and technical assistance program for
3 local governments.

4 In addition to reducing
5 barriers for private developers, the City
6 has worked to include more alternative
7 energy projects in City facilities,
8 including solar. In 2011, the City
9 unveiled its first solar photovoltaic
10 sytem located at Philadelphia Water
11 Department's Southeast Water Pollution
12 Control Plant. The 250-kilowatt solar
13 array consists of more than a thousand
14 panels covering 60,000 square feet, and
15 its electricity will help power the
16 energy-intensive task of water treatment.
17 The project's total cost of 1.7 million
18 was funded jointly by a Recovery Act
19 Energy Efficiency and Conservation Block
20 Grant and the Philadelphia Water
21 Department.

22 On market conditions, the good
23 news is that the cost of installed solar
24 continues to drop nationwide as solar
25 gains mainstream acceptance, is

1 4/11/16 - ENVIRONMENT - BILL 160110/RES.160211

2 recognized as a cost-competitive source
3 of electricity, and companies develop
4 improved methods to interact with
5 customers.

6 Throughout the nation,
7 state-level policy drives local solar
8 markets, and Pennsylvania's solar
9 industry has lagged in recent years due
10 to inconsistent market signals from
11 Harrisburg and the ending of incentive
12 programs. There have been two states
13 thus far that have previously helped
14 encourage solar development. I won't go
15 into details on them. One is the
16 Alternative Energy Portfolio Standard,
17 which basically at this point state
18 action would be needed to increase the
19 competitiveness in order to increase the
20 SREC market. And the second one is the
21 PA Sunshine Rebate Program, and currently
22 at this point unfortunately there are no
23 state incentives available.

24 Another challenge to local
25 markets for solar is low energy prices.

1 4/11/16 - ENVIRONMENT - BILL 160110/RES.160211

2 Regional electricity prices are near
3 12-year lows, making payback on solar
4 investments more challenging. Large
5 institutions like the City of
6 Philadelphia and the School District
7 purchase electricity in bulk and pay
8 lower electricity prices compared to the
9 residential marketplace, making the
10 economics of investment even more
11 challenging.

12 The combination of low
13 electricity prices and limited state
14 incentives makes it hard to economically
15 justify solar products over short terms.
16 However, projects can still make economic
17 sense over longer time horizons if
18 consumers are comfortable with a longer
19 term investment.

20 Lastly, opportunities for solar
21 on government facilities, current federal
22 tax policy puts government facilities at
23 a disadvantage relative to the private
24 sector for solar projects. Tax-exempt
25 entities like cities and school districts

1 4/11/16 - ENVIRONMENT - BILL 160110/RES.160211

2 do not qualify for the 30 percent Solar
3 Investment Tax Credit or federal rules on
4 accelerated depreciation of assets that
5 help finance solar installations. While
6 there's nothing to prevent the direct
7 installation and ownership of solar
8 panels by a city or school, no federal
9 incentives can be used, thus making
10 projects less attractive compared to
11 private ownership. Simply put, cities
12 and schools are not the most
13 cost-efficient owners of solar projects.
14 To make solar more cost efficient, the
15 best option for schools or government
16 entities is to purchase solar energy
17 through a power purchase agreement, or a
18 PPA.

19 The Energy Office within the
20 Office of Sustainability is exploring
21 this option as a vehicle for projects on
22 City-owned buildings. A PPA would
23 involve a private solar development
24 company entering into an agreement to
25 build, own, and operate a solar system on

1 4/11/16 - ENVIRONMENT - BILL 160110/RES.160211

2 City-owned property. The City would
3 directly consume the solar electricity
4 and enter into a long-term purchase
5 agreement of the electricity to pay for
6 the installation. Because the panels are
7 owned by a third-party solar developer,
8 the 30 percent solar federal tax credit
9 applies to the project and the City would
10 receive a reduced electricity price as a
11 result.

12 As the City and the School
13 District explore potential solar options,
14 we strongly encourage considering
15 efficiency improvements before installing
16 alternative energy systems. By improving
17 a building's energy efficiency first, you
18 reduce the size and the cost of the solar
19 system needed. Already we have seen that
20 energy-efficiency measures in City
21 facilities reduce costs more effectively
22 than solar and has higher co-benefits,
23 like increasing comfort, resilience, and
24 often addressing infrastructure that
25 needs improvement.

1 4/11/16 - ENVIRONMENT - BILL 160110/RES.160211

2 Thank you for the opportunity
3 to provide testimony today. I'm happy to
4 take your questions.

5 COUNCILWOMAN BROWN: We thank
6 you.

7 Let's hear from the entire
8 panel.

9 Amanda Byrne.

10 MS. KNAPP: So the panelists
11 are here to help me answer any of your
12 questions, because they are the
13 deep-level experts into solar. So
14 they're really here to back me up for
15 your very hard questions that I know
16 you'll bring.

17 COUNCILWOMAN BROWN: Well,
18 let's first get Adam's name correctly on
19 the record.

20 MR. AGALLOCO: It's Adam
21 Agalloco.

22 COUNCILWOMAN BROWN: Adam?

23 MR. AGALLOCO: Agalloco.

24 COUNCILWOMAN BROWN: Thank you.

25 Councilman Green.

1 4/11/16 - ENVIRONMENT - BILL 160110/RES.160211

2 COUNCILMAN GREEN: Yes. Thank
3 you, Madam Chair.

4 Ms. Knapp, thank you for your
5 testimony. You made reference to a power
6 purchase agreement is probably the best
7 way in reference to doing some type of
8 solar initiative, and that to me seems
9 like a P3 or public-private partnership
10 type of opportunity. And you said, based
11 on your testimony, that provides the
12 ability for federal tax credits.

13 Has there been any
14 conversations with the Wolf
15 Administration in reference to solar
16 energy? I know under Governor Rendell's
17 Administration we had Growing Greener I
18 and II, which provided an opportunity to
19 kind of move the solar industry in some
20 way. I know Governor Christie had done a
21 lot of work in New Jersey in reference to
22 the solar market. I haven't heard of
23 that type of conversation going on at the
24 state level. Is that something you're
25 aware of?

1 4/11/16 - ENVIRONMENT - BILL 160110/RES.160211

2 MS. KNAPP: Not that we've been
3 a part of thus far, although I have been
4 talking with some of my colleagues in
5 Pittsburgh about jointly going to
6 Harrisburg together and talking to some
7 of the agencies there and talking to the
8 Governor's Policy Office about some of
9 our priority issues.

10 I skipped over the part about
11 the Alternative Energy Portfolio
12 Standard, but that's really the place
13 where I think there's the biggest
14 opportunity for Harrisburg to help drive
15 the solar market. There's two things
16 that the Legislature can do. One is to
17 increase the size of the Alternative
18 Energy Portfolio Standard, basically
19 making us more competitive with
20 surrounding states. The other one is to
21 sort of close the borders and only allow
22 power that's developed within
23 Pennsylvania to be used to meet that
24 criteria of that standard. Either one of
25 those things could help move a long way.

1 4/11/16 - ENVIRONMENT - BILL 160110/RES.160211

2 Right now we basically have bled a lot of
3 the renewable energy jobs that were
4 created in Pennsylvania to our
5 surrounding neighbored states that have
6 stronger requirements than we do.

7 So I think there's an
8 opportunity. We haven't been a part of
9 that discussion yet, but it's certainly
10 on our to-do list.

11 COUNCILWOMAN BROWN: So have
12 you registered for those two possible
13 actions with the Governor's office or the
14 Legislature?

15 MS. KNAPP: Not yet. Like I
16 said, we're planning on trying to go with
17 our Pittsburgh colleagues to do that at
18 some point, probably before the end of
19 this legislative session.

20 COUNCILWOMAN BROWN: Okay. All
21 right. And do you think that it will be
22 a heavy lift?

23 MS. KNAPP: Well, when the bill
24 was first passed, Gamesa, which is a
25 large wind company, was one of the

1 4/11/16 - ENVIRONMENT - BILL 160110/RES.160211

2 lobbyists for it, and they said not only
3 would they -- they wanted to locate their
4 North American headquarters somewhere in
5 Pennsylvania and they wanted to set up a
6 wind turbine manufacturing facility as
7 well, and they said not only would they
8 not move here if it didn't pass, but they
9 also wouldn't move here if it didn't pass
10 with bipartisan support, because they
11 didn't want to set up a business to have
12 it be at the whim of political changes
13 every couple of years.

14 So having a strong voice like
15 that could help make sure that this isn't
16 a partisan issue, that this is about good
17 local jobs and clean energy.

18 So I personally feel optimistic
19 that it's possible, but we had to get --
20 I think we had to get a budget first and
21 there were other priorities in Harrisburg
22 certainly.

23 COUNCILWOMAN BROWN: Well, my
24 ask would be, in a way that's appropriate
25 through the Administration, would be that

1 4/11/16 - ENVIRONMENT - BILL 160110/RES.160211

2 you keep members of this Committee
3 informed of your discussions with members
4 of the Philadelphia Delegation, as we do
5 enjoy relationships with many of those
6 members, and for those who get it and
7 want to wrap their head around this type
8 of issue, we would appreciate knowing
9 that.

10 MS. KNAPP: Absolutely.

11 COUNCILWOMAN BROWN: So that we
12 can do our own advocacy from where we
13 sit.

14 MS. KNAPP: That would be
15 great.

16 COUNCILWOMAN BROWN: That would
17 be very, very helpful.

18 MS. KNAPP: Thank you.

19 COUNCILWOMAN BROWN: Lastly,
20 could Amanda and Adam just give me an
21 elevator description of the work that you
22 do.

23 MR. AGALLOCO: Sure. The
24 Energy Office is part of the Office of
25 Sustainability. So we're essentially the

1 4/11/16 - ENVIRONMENT - BILL 160110/RES.160211

2 municipal operational arm for energy in
3 City government. So we do everything
4 from purchasing to procurement of the
5 City's electricity, natural gas, steam
6 supplies, vehicle fuel, as well as
7 managing and kind of doing the day-to-day
8 utility bills. The City gets about 6,000
9 utility bills on an average month. We
10 capture that data and basically are able
11 to turn it into usable information for
12 departments and for our own use.

13 The last function that we serve
14 is around programs and projects. So we
15 are kind of the central hub for municipal
16 operation of installing energy efficiency
17 within City facilities, exploring
18 renewable energy opportunities.

19 COUNCILWOMAN BROWN: That was
20 big. So is that initiative still
21 ongoing?

22 MR. AGALLOCO: Yeah. I started
23 with the City six years ago in the Office
24 of Sustainability and the Energy Office
25 has kind of grown out of part of the

1 4/11/16 - ENVIRONMENT - BILL 160110/RES.160211

2 Office of Sustainability, formerly the
3 Mayor's Office of Transportation and
4 Utilities. We now have three, we'll soon
5 have four full-time employees.

6 COUNCILWOMAN BROWN: Very, very
7 good.

8 Please.

9 MS. BYRNE: Sure. So within
10 that and specific to this hearing today,
11 I've been helping to coordinate
12 conversations between local solar
13 installers and our L&I department --

14 COUNCILWOMAN BROWN: You have
15 to talk louder and talk into the mic.

16 MS. BYRNE: Sorry. My voice is
17 a little bit low today.

18 But I've been helping
19 coordinate conversations between local
20 solar installers and our L&I department
21 just to make sure that everybody is up to
22 speed on what the latest technologies are
23 and making sure that any issues that come
24 up are well communicated to our L&I
25 department. That's one of the things

1 4/11/16 - ENVIRONMENT - BILL 160110/RES.160211

2 just specific to today that I do within
3 our office.

4 COUNCILWOMAN BROWN: Okay. You
5 said L&I?

6 MS. BYRNE: Yes.

7 COUNCILWOMAN BROWN: Okay. All
8 right, then.

9 Councilwoman Bass.

10 COUNCILWOMAN BASS: No.

11 COUNCILWOMAN BROWN: Okay.
12 Very well.

13 We thank you for your
14 testimony.

15 We want to invite up the next
16 panel: Zoe Cina-Sklar, Campaign
17 Organizer for PennEnvironment; Matt
18 Walker, Community Outreach Director for
19 Clean Air Council; Michael Neill,
20 Apprenticeship Training Director for the
21 International Brotherhood of Electrical
22 Workers.

23 (Witnesses approached witness
24 table.)

25 COUNCILWOMAN BROWN: Good

1 4/11/16 - ENVIRONMENT - BILL 160110/RES.160211

2 afternoon. We'll start with Zoe
3 Cina-Sklar. State your name and proceed
4 with your testimony.

5 MS. CINA-SKLAR: Good
6 afternoon. My name is Zoe Cina-Sklar and
7 I am a Campaign Organizer with
8 PennEnvironment. I want to thank
9 Chairwoman Reynolds Brown, Councilman
10 Green, and all of the members of
11 Philadelphia City Council for holding
12 this important hearing today.

13 PennEnvironment is a statewide,
14 citizen-based environmental advocacy
15 group with nearly 40,000 contributing
16 members, volunteers, and online activists
17 in the Philly area.

18 Last month, we released a new
19 report, Solar Schools for Philadelphia,
20 which outlined the environmental and
21 economic benefits of installing solar
22 panels on Philadelphia's public schools.
23 I am glad to be here today to continue
24 the conversation about Solar Schools and
25 to discuss next steps.

1 4/11/16 - ENVIRONMENT - BILL 160110/RES.160211

2 Our report shows that the
3 School District of Philadelphia could
4 cover nearly 40 percent of its
5 electricity needs by installing solar
6 panels on the rooftops of the City's
7 public schools. These solar
8 installations would save taxpayers
9 millions of dollars that would otherwise
10 go toward paying the School District's
11 electricity bills, while also reducing
12 pollution and creating local jobs.

13 These savings would in turn
14 free up more money for the things that we
15 actually want to fund in our school
16 system, like teachers, school nurses,
17 counselors, and other educational
18 necessities.

19 It is also important to note
20 that there are various financing models,
21 including power purchase agreements,
22 which would allow the School District to
23 pursue this project without additional
24 up-front costs.

25 PennEnvironment is incredibly

1 4/11/16 - ENVIRONMENT - BILL 160110/RES.160211

2 excited that the School District of
3 Philadelphia could become a national
4 solar leader, all while saving money,
5 creating jobs, providing educational
6 opportunities, and fostering a healthy
7 environment. We hope that this report
8 will serve as a jumping-off point for the
9 School District and for the City of
10 Philadelphia to make a significant
11 commitment to installing solar on
12 Philadelphia school buildings.

13 Our report contains a number of
14 policy recommendations. First, we call
15 on the state to strengthen Pennsylvania's
16 commitment to solar energy by increasing
17 the renewable energy standard's solar
18 energy requirement and also by mandating
19 that all solar energy credits be
20 generated in state.

21 Secondly, we call on the City
22 to require that any extensive school
23 renovations include a plan to study the
24 cost effectiveness of solar panels and
25 also to require that any new school

1 4/11/16 - ENVIRONMENT - BILL 160110/RES.160211

2 buildings use solar panels.

3 And, finally, we call on the
4 School District of Philadelphia to create
5 a program to put solar panels on public
6 schools across the City.

7 While this is certainly a bold
8 vision, it is not unprecedented. There
9 are nearly 4,000 schools across the
10 country, including 41 here in
11 Pennsylvania, with solar installations.

12 With the cost of solar coming
13 down, there is a growing awareness of
14 solar power as a mainstream energy
15 solution with considerable benefits for
16 our health, our economy, and our
17 environment.

18 What's more is that
19 Pennsylvanians are already incredibly
20 enthusiastic about expanding solar energy
21 in the Commonwealth. A recent bipartisan
22 poll found that over 80 percent of
23 Pennsylvanians want to increase the
24 state's use of renewable energy sources.

25 In sum, solar schools are a

1 4/11/16 - ENVIRONMENT - BILL 160110/RES.160211

2 triple win for our environment, our
3 economy, and the City students.

4 For anyone who is interested in
5 reading our full report, you can find it
6 on our website, pennenvironment.org. I
7 also have fact sheets with me today that
8 have more details on the report's
9 finding.

10 Again, I want to express my
11 appreciation to Chairwoman Reynolds
12 Brown, Councilman Green, and all of the
13 members of City Council for allowing me
14 to testify today.

15 Thank you.

16 COUNCILWOMAN BROWN: Matt
17 Walker.

18 MR. WALKER: Thanks. My name
19 is Matt Walker and I'm the Community
20 Outreach Director with Clean Air Council.
21 We're an environmental health
22 organization with nearly 10,000 members
23 working to improve air quality across the
24 region and the state for more than 45
25 years. Thank you for the opportunity to

1 4/11/16 - ENVIRONMENT - BILL 160110/RES.160211

2 speak.

3 Clean Air Council has promoted
4 renewable energy in Pennsylvania since
5 the Council formed Community Energy,
6 Incorporated, which brought the first
7 commercial wind farm to Pennsylvania in
8 1998. Since then, the Council has helped
9 spur growth in solar energy by signing up
10 customers to purchase 100 percent
11 Pennsylvania-produced solar energy.

12 Despite languishing state
13 policies, the Council continues to
14 promote renewable energy through a
15 variety of programs aimed to spur
16 residential demand. For example, in
17 early 2015, the Council recently
18 partnered with the Sustainable Business
19 Network to implement a pilot Solarize
20 campaign in Philadelphia to encourage
21 homeowners to purchase rooftop solar.
22 The Council organized workshops for
23 homeowners to learn about how to use
24 their collective buying power to get
25 systems for their properties at greatly

1 4/11/16 - ENVIRONMENT - BILL 160110/RES.160211

2 reduced costs. Through the program, we
3 educated over 125 people and got 15
4 households to go solar. Our total impact
5 was about 75 kilowatts of installed
6 solar, about the equivalent of planting
7 over 25,000 trees.

8 There's no more serious public
9 health, environmental justice or economic
10 development threat than climate change.
11 Pennsylvania is the third largest emitter
12 of greenhouse gases in the United States
13 and it contributes approximately 1
14 percent of all greenhouse gas emission
15 worldwide. Our consumption energy,
16 specifically fossil fuels such as coal,
17 oil, and natural gas, is one of the main
18 causes of the air pollution that has
19 resulted in polluted cities and towns and
20 a warming climate.

21 Residents of Philadelphia are
22 exposed to chronic elevated levels of air
23 pollution. The Philadelphia region is
24 not in attainment of the federal
25 standards for ground-level ozone, which

1 4/11/16 - ENVIRONMENT - BILL 160110/RES.160211

2 is the main constituent of smog.

3 Reducing air pollution is crucial for

4 Philadelphia, where about one in four

5 children are diagnosed with asthma,

6 nearly double the national average.

7 Ground-level ozone aggravates lung

8 diseases such as asthma, emphysema, and

9 chronic bronchitis and increases the

10 frequency of asthma attacks.

11 Philadelphia's resource-strained

12 neighborhoods are often impacted the most

13 from air pollution and weather extremes,

14 both of which are exacerbated by climate

15 change, but they could also reap the

16 positive health effects of a city that

17 focuses on using more clean sources of

18 energy that displace dirtier fossil

19 fuels.

20 Displacing fossil fuel-produced

21 energy with renewable energy is one of

22 the best ways to make a dent in tackling

23 Philadelphia's public health issues and

24 curbing climate change. Using more

25 renewable energy reduces premature death,

1 4/11/16 - ENVIRONMENT - BILL 160110/RES.160211

2 lost work days, and healthcare costs and
3 provide thousands of local jobs.
4 Scientists with the Intergovernmental
5 Panel on Climate Change stated in their
6 most recent report that to avoid
7 catastrophic climate change, renewable
8 energy must be the dominant energy source
9 by 2050.

10 PennEnvironment's recent Solar
11 Schools for Philadelphia report details
12 one way that Philadelphia could put more
13 solar energy into our electricity mix.
14 The report found that Philadelphia
15 schools have 100 acres of available
16 rooftop space and could collectively
17 generate 37 percent of the school
18 system's annual electricity use.
19 Installing solar on schools provides a
20 great educational opportunity and direct
21 exposure to one of the fastest growing
22 industries in the country and would also
23 protect schools from the highly volatile
24 prices of fossil fuel energy such as oil
25 and natural gas.

1 4/11/16 - ENVIRONMENT - BILL 160110/RES.160211

2 Clean Air Council strongly
3 supports City Council in working with the
4 Philadelphia School District to put solar
5 panels on Philadelphia schools as quickly
6 as possible. If the City Council and the
7 Philadelphia School District bring more
8 solar energy to Philadelphia, they would
9 help spur local, well-paying, and safe
10 jobs for Philadelphians that cannot be
11 outsourced. Solar jobs pay almost double
12 the national average at \$21 per hour.
13 Based on National Renewable Energy
14 Laboratory data, NREL, the Council
15 estimates that in Philadelphia
16 cost-effective rooftop solar can produce
17 about 25 percent of the City's
18 electricity needs, provide more than
19 4,000 jobs, well-paid jobs, increase grid
20 reliability, and over 20 years bring
21 about a billion dollars worth of direct
22 economic activity annually for the
23 Philadelphia area. Less than 1 percent
24 of Philadelphia's electricity comes from
25 rooftop solar.

1 4/11/16 - ENVIRONMENT - BILL 160110/RES.160211

2 The solar industry and the
3 location of solar energy installations in
4 production has the potential to create a
5 workforce more representative of the
6 City's demographics than fossil fuel
7 energy sectors have. The solar workforce
8 continues to have a more diverse
9 workforce than many other industry
10 sectors, including coal and natural gas.
11 Opportunities for strong and coordinated
12 workforce development initiatives for
13 solar energy are crucial for ensuring
14 that Philadelphia's workforce is fully
15 prepared to fill job openings in one of
16 the fastest growing job sectors in the
17 country.

18 As an example of one small
19 training initiative, Clean Air Council is
20 partnering with local installer, Solar
21 States, on a workforce development
22 training program at the YouthBuild
23 Charter School in North Philadelphia to
24 prepare youth there with the installation
25 and marketing skills necessary to be

1 4/11/16 - ENVIRONMENT - BILL 160110/RES.160211

2 competitive in the solar industry.

3 Pennsylvania lags far behind
4 surrounding states in policies that
5 advance solar. While American solar jobs
6 increased by 20 percent in 2013,
7 Pennsylvania lost 1,100 solar jobs, more
8 than a quarter of our market.

9 Pennsylvania's Solar Renewable Energy
10 Credits are worth a lot less than other
11 states because the Pennsylvania
12 Alternative Energy Portfolio Standards
13 allows the Commonwealth to purchase SRECs
14 from other states. Other states are
15 installing a lot more solar than
16 Pennsylvania. As a result of
17 Pennsylvania's lagging policies,
18 Philadelphia is well-positioned to play
19 an important role in promoting renewable
20 energy. Philadelphia could explore and
21 act upon the following policy and
22 financial mechanisms to advance renewable
23 energy:

24 Include solar installations in
25 the tax abatement policy. Give

1 4/11/16 - ENVIRONMENT - BILL 160110/RES.160211

2 developers and the subsequent homeowners
3 at least a year of tax breaks if solar
4 panels are installed.

5 Support the purchase of
6 additional renewable energy credits from
7 the Philadelphia region to cover the
8 amount of electricity used by the City.

9 And allow for expedited
10 permitting from L&I.

11 In closing, solar energy has a
12 lot to offer the Philadelphia region in
13 terms of economic growth, jobs, and
14 public health and environmental benefits.
15 The Council urges City Council to work
16 with the Philadelphia School District to
17 put solar on Philadelphia schools as
18 quickly as possible and then to develop
19 specific policies that will demonstrate
20 Philadelphia's leadership in
21 environmental sustainability.

22 Thank you for the time to speak
23 here today.

24 COUNCILWOMAN BROWN: You're
25 very welcome. Did you submit written

1 4/11/16 - ENVIRONMENT - BILL 160110/RES.160211

2 testimony?

3 MR. WALKER: Yeah.

4 COUNCILWOMAN BROWN: So it must
5 be at the table. Okay, then.

6 We'll follow up with questions
7 after we hear from Michael Neill,
8 International Brotherhood of Electrical
9 Workers. Good afternoon.

10 MR. NEILL: Good afternoon. It
11 is a privilege and an honor for me to
12 have the opportunity to speak before this
13 Committee today representing IBEW Local
14 98. My name is Michael Neill. I come
15 before you today as a proud graduate of
16 South Philadelphia High School, who has
17 spent my entire life working and raising
18 my family in Philadelphia. Today, I have
19 the privilege of leading IBEW Local 98's
20 apprentice training program, which
21 provides hundreds and hundreds of young
22 men and women from around the
23 Philadelphia area the opportunity to
24 learn a trade and, more importantly, as
25 Secretary of Labor Perez says, earn a

1 4/11/16 - ENVIRONMENT - BILL 160110/RES.160211

2 golden ticket to the middle class.

3 I am here to speak in favor of
4 this proposal on behalf of the 4,500
5 members of IBEW Local 98 who work to
6 install, design, and maintain electrical
7 equipment and systems in Philadelphia
8 every day. I know there will be a lot of
9 testimony on this proposal that addresses
10 the issues from many different
11 perspectives. I briefly want to tell you
12 about three primary reasons IBEW 98 is
13 here to support this initiative.

14 First, from a purely technical
15 perspective, I can tell you that
16 increasingly more and more electrical
17 system designers and engineers are
18 recognizing that solar and distributed
19 energy systems significantly increase the
20 efficiency and effectiveness of the
21 electrical distribution system.

22 The efficiency of solar
23 products and panels is dramatically
24 increasing, and the technology itself is
25 enough to make the case for installing

1 4/11/16 - ENVIRONMENT - BILL 160110/RES.160211

2 these systems. We can see that nearby in
3 the tremendous development of the
4 Philadelphia Navy Yard. Each day the
5 Navy Yard seemingly grows bigger and
6 distinguishes itself as one of the
7 leading DOE GridSTAR programs in the U.S.
8 This proposal will help extend what is
9 occurring at the Navy Yard.

10 Second, from an economic
11 perspective, this proposal makes
12 tremendous sense. With the increased
13 efficiency of solar panels and equipment
14 comes an increasingly economic benefit
15 for those who include solar in their
16 electrical system design. Quite simply,
17 solar pays back. I know this firsthand
18 as we at IBEW Local 98 long ago decided
19 to equip all our building and training
20 locations in Philadelphia with solar
21 panels and technology. This proposal has
22 the potential to reduce the cost of
23 delivery of electricity to our
24 Philadelphia schools.

25 Last, and perhaps the most

1 4/11/16 - ENVIRONMENT - BILL 160110/RES.160211

2 important, I'm here to speak in support
3 of this proposal because of the social
4 impact proposals like this can have on
5 our community. Each year I see firsthand
6 how providing jobs throughout our IBEW
7 apprentice program changes the lives of
8 young men and women here in Philadelphia.
9 I see every day how excited our
10 apprentices are to learn and work on the
11 installation of these systems. It
12 literally helps them change their lives.

13 Proposals like this make sense
14 for many reasons. They are technically
15 sound, they come with an economic benefit
16 and cost savings and, most importantly,
17 allow us to provide and advance the
18 opportunity for a great career for many
19 young men and women in Philadelphia who
20 desperately need this opportunity.

21 Thank you for the opportunity
22 to speak with you today.

23 COUNCILWOMAN BROWN: You're
24 very, very welcome, all of you. I do
25 have questions, but I would ask that

1 4/11/16 - ENVIRONMENT - BILL 160110/RES.160211

2 Councilman Green, please.

3 COUNCILMAN GREEN: Thank you,
4 Madam Chair.

5 I just wanted to state on the
6 record I want to thank all of the great
7 work that PennEnvironment has done on
8 this issue, both David and Zoe, and
9 working with interesting partners like
10 PFT and IBEW to kind of bring this idea
11 of solar panels to the City of
12 Philadelphia, especially the School
13 District. Also I know of the work you've
14 done with the Frontier Group, and as the
15 last panel just spoke about job
16 opportunities, Council President Clarke
17 announced earlier this year his energy
18 initiative. This is something that's
19 closely aligned in that same concept of
20 bringing job opportunities to the City of
21 Philadelphia, because not only does it
22 provide an opportunity to reduce expenses
23 at the School District, but it also
24 provides a job opportunity at the local
25 level.

1 4/11/16 - ENVIRONMENT - BILL 160110/RES.160211

2 I think too often we don't
3 leverage our assets -- assets are not
4 just financial assets, but physical
5 assets like school buildings -- as a way
6 to provide more jobs in the City of
7 Philadelphia. We all know we have one of
8 the highest rates of poverty in the
9 nation, and to the extent of using this
10 way of not only reducing expenses for the
11 schools, but also providing an
12 opportunity for more local jobs.

13 And then, finally, it also
14 provides a unique perspective to expose
15 young people to other jobs. So when a
16 child who's at a school and they see
17 someone who may be doing something in
18 reference to solar, it may expose them to
19 a whole wealth of job opportunities that
20 they may have never even thought about
21 prior to someone putting a solar panel on
22 their school buildings, which provides
23 all kinds of opportunities.

24 So I just want to thank you for
25 the work that you've done. Thank you for

1 4/11/16 - ENVIRONMENT - BILL 160110/RES.160211

2 bringing this idea to my attention, and
3 we'll continue to focus and try to make
4 things move forward.

5 So thank you.

6 COUNCILWOMAN BROWN: I want to
7 underscore the perspective and the
8 philosophy and the expectation that while
9 we move to do this because it's the right
10 thing to do, we also want to make sure we
11 do it right. And doing it right means
12 that young people from Philadelphia --
13 I'll repeat, from Philadelphia -- whose
14 parents are taxpayers here should have
15 first opportunity to learning these
16 new -- these jobs of the future.
17 Anything over that is unacceptable.

18 And so to hear an advocacy
19 organization like Clean Air Council speak
20 to the job development, the workforce
21 development component is quite, quite
22 encouraging. I will say to you it's not
23 a habit that we see often where advocacy
24 organizations dig deeper to delve and
25 look at the workforce development aspect.

1 4/11/16 - ENVIRONMENT - BILL 160110/RES.160211

2 So that's quite encouraging. I need to
3 say thank you as well.

4 Please tell us, Michael Neill,
5 the kinds of things you're already doing
6 over there around solar panel training,
7 solar panel development, solar panel
8 installation, I guess it would be called,
9 right?

10 MR. NEILL: Solar panel
11 installation. All five of our buildings
12 have solar installations on them, going
13 from a small 3 KW system all the way up
14 to 31 KW. We installed our first solar
15 array on one of our buildings in 1999.
16 Over probably 2,500 of our members have
17 went through solar training. Our
18 apprenticeship curriculum consists of
19 over 1,100 instructional hours, where
20 about 80 of those hours focus on solar
21 installations.

22 Part of solar installations, as
23 I said, is an electrical distribution.
24 So it's a lot more than just
25 understanding how to put a solar panel

1 4/11/16 - ENVIRONMENT - BILL 160110/RES.160211

2 together or how to take it out of a box.

3 As soon as you take a solar panel out of
4 a box, it starts generating electricity.

5 So our main concern is making sure that
6 the members, when they understand that,
7 is safe in doing that.

8 COUNCILWOMAN BROWN: So if I'm
9 hearing you correctly, there is no
10 stand-alone separate solar apprentice
11 class?

12 MR. NEILL: Not for us.

13 COUNCILWOMAN BROWN: Okay. All
14 right, then. And so if there's no
15 stand-alone separate solar installation
16 class, then the apprentice training
17 program captures all aspects of your
18 world?

19 MR. NEILL: Correct.

20 COUNCILWOMAN BROWN: I see.
21 Okay, then.

22 Questions, Council Lady Gym?

23 COUNCILWOMAN GYM: Yes. Thank
24 you, Madam Chair.

25 So one question I had for

1 4/11/16 - ENVIRONMENT - BILL 160110/RES.160211

2 Mr. Neill. So I know that you've been
3 invested in looking at solar. I think
4 Madam Chair noted that there's not
5 exactly an apprenticeship program for
6 solar; is that right?

7 MR. NEILL: There's not a
8 separate program for just solar. Our
9 program consists of 8,000 on-the-job
10 hours and 1,100 classroom hours. Out of
11 those 1,100 classroom hours, we focus a
12 little bit over 80 hours on solar
13 installation. But throughout their 1,100
14 hours, electrical safety is a big part of
15 it. As you're seeing what happened over
16 the bridge with the fire, it probably was
17 maybe installed by an unqualified person.

18 COUNCILWOMAN GYM: Would you
19 consider more hours invested in solar
20 apprenticeships if this project expands
21 more?

22 MR. NEILL: Our program is
23 built around to be able to change. We
24 have a core curriculum that the whole
25 IBEW around the country goes to for two

1 4/11/16 - ENVIRONMENT - BILL 160110/RES.160211

2 years, and then after that, the next
3 three years you have the opportunity by
4 your jurisdiction on what is crucial to
5 that area to be able to focus on. So you
6 can change.

7 For example, in Philadelphia,
8 our apprentice program relies heavily on
9 hazardous locations because of our work
10 at the refinery. We spend a lot of time
11 on healthcare because of all our major
12 hospitals. So in Los Angeles or
13 California that has installed more solar,
14 they may put more of that part of the
15 curriculum into their apprenticeship
16 program.

17 COUNCILWOMAN BROWN: Let me
18 attempt to ask it a different way.

19 Is it possible to have a solar
20 apprentice program strictly to train
21 Philadelphia area students in the
22 expertise of solar installation and them
23 having a bona fide certificate, license,
24 whatever is required, to be then sent to
25 Girls High School where I attended or

1 4/11/16 - ENVIRONMENT - BILL 160110/RES.160211

2 Morton McMichael in Mantua to put solar
3 on top of those buildings?

4 MR. NEILL: Under the
5 Department of Labor guidelines for the
6 State of Pennsylvania -- I sit on the
7 state Apprenticeship Council -- a minimum
8 of 160 hours of classroom instruction per
9 year has to be part of the on-the-job
10 training.

11 COUNCILWOMAN BROWN: A minimum
12 of 150?

13 MR. NEILL: 160.

14 COUNCILWOMAN BROWN: Got you.

15 COUNCILWOMAN GYM: And so I
16 think the question was you provide 80
17 right now, right?

18 MR. NEILL: We provide 80 for
19 an electrician.

20 COUNCILWOMAN GYM: And so what
21 we're trying to understand is --

22 MR. NEILL: Can we build an
23 apprenticeship just for solar? I don't
24 think there's enough there.

25 COUNCILWOMAN GYM: Okay.

1 4/11/16 - ENVIRONMENT - BILL 160110/RES.160211

2 MR. NEILL: Unless you include
3 all aspects of the electrical trade.

4 COUNCILWOMAN BROWN: Which
5 includes safety and --

6 MR. NEILL: Correct.

7 COUNCILWOMAN BROWN: I see.

8 MR. NEILL: Community College
9 of Philadelphia received a grant from the
10 Department of Labor in Pennsylvania a
11 couple years ago for \$5 million and sent
12 students through a 32-hour course on
13 solar, and my concern always over the
14 years was, where are they at now? What
15 are they doing with that?

16 COUNCILWOMAN GYM: So we're
17 looking to -- if we're going to invest in
18 solar and if we're going to make sure
19 that it works well, then we have to make
20 sure that we have the appropriate
21 programs to bring people in there and we
22 have to partner with organizations and
23 groups that are going to ensure that that
24 is the case. So it's important for us to
25 get clarity about who is able to actually

1 4/11/16 - ENVIRONMENT - BILL 160110/RES.160211

2 do that and be a full partner on that.

3 It becomes probably less of a
4 priority if somebody is not able to be a
5 full partner on that. So it's partly why
6 we're trying to get some clarity here on
7 who has the capacity as well as who is
8 thinking ahead on that. So in light of
9 that, did you have any other perspectives
10 on that?

11 MR. NEILL: We're not the only
12 ones providing education in the solar
13 energy.

14 COUNCILWOMAN BROWN: Is that
15 right?

16 MR. NEILL: I mean, we
17 represent the 4,500 members under IBEW
18 98.

19 COUNCILWOMAN GYM: Right. And
20 just for clarity, you're saying that IBEW
21 only provides 80 hours. The State of
22 Pennsylvania requires 160 hours for
23 certification.

24 MR. NEILL: IBEW Local 98 has
25 an apprentice program that has 250 hours

1 4/11/16 - ENVIRONMENT - BILL 160110/RES.160211

2 per year over the 160. We have 90 hours
3 over, and we also have a five-year
4 program. To have an apprenticeship
5 program approved just as a solar
6 installer, you'd have to have 160 hours
7 of curriculum per year.

8 COUNCILWOMAN GYM: Devoted
9 solely to solar?

10 MR. NEILL: Devoted strictly to
11 solar.

12 COUNCILWOMAN GYM: Which you
13 currently are not doing, nor you're not
14 looking at it as a possibility right
15 know?

16 MR. NEILL: No.

17 COUNCILWOMAN GYM: So that
18 helps in terms of clarifying where
19 priorities, partnerships could be.

20 And for your other
21 apprenticeships, would you say that what
22 percentage of Philadelphia District
23 students participate in the IBEW program,
24 apprenticeship program?

25 MR. NEILL: We're lucky enough

1 4/11/16 - ENVIRONMENT - BILL 160110/RES.160211

2 to work with the School District of
3 Philadelphia every day, PHA. We're a
4 founder of our own charter high school.
5 Those exact numbers I wouldn't know.
6 Probably --

7 COUNCILWOMAN GYM: Could we
8 find that out maybe?

9 MR. NEILL: Yeah.

10 COUNCILWOMAN GYM: That would
11 be great. And I'm looking mostly at
12 District-managed public schools trying to
13 understand, because we're looking at as
14 we work on turning around some of our
15 neighborhood high schools and programs
16 that go in them, it would be helpful to
17 know again really strong partners who
18 could help with that. So thank you very
19 much.

20 COUNCILWOMAN BROWN: Terrific.
21 Councilman Green.

22 COUNCILMAN GREEN: Thank you,
23 Madam Chair.

24 As you were talking, it made me
25 think of the work that Liz Robinson has

1 4/11/16 - ENVIRONMENT - BILL 160110/RES.160211

2 been doing in reference to returning
3 citizens and providing them opportunities
4 to get involved in energy retrofits for
5 residential homeowners and creating a
6 whole industry where entrepreneurs have
7 been created and now employees of those
8 entrepreneurs also went through the ECA
9 program.

10 Has there been any conversation
11 in reference to either reaching out to
12 Energy Coordinating Agency in reference
13 to the work that they've done, especially
14 in the area of returning citizens, as we
15 often talk about providing job
16 opportunities, but not just job
17 opportunities but entrepreneurship
18 opportunities? Has there been any
19 conversations in that regard in reference
20 to providing some type of collaboration
21 with her organization? That's for any of
22 the panelists.

23 MR. WALKER: I'll just note --
24 I'm Matt Walker with Clean Air Council.
25 I'll just note that the Council

1 4/11/16 - ENVIRONMENT - BILL 160110/RES.160211

2 has -- I have spoken to Liz Robinson
3 about our solar youth program and wanting
4 to get sort of feedback on that from her
5 and figure out opportunities for future
6 collaboration, but that's sort of --
7 that's where the conversations are right
8 now.

9 MS. CINA-SKLAR: I
10 personally -- this is Zoe from
11 PennEnvironment.

12 I have not had those
13 conversations myself. I could follow up
14 on whether other folks have had that
15 conversation.

16 COUNCILWOMAN BROWN: I do not
17 mean at all to be rude. I'm trying to do
18 what's called multi-tasking, and I'm
19 failing. So if you repeat your comment,
20 please.

21 MS. CINA-SKLAR: No worries.
22 So I was just saying that I personally
23 have not had those conversations, but
24 will need to follow up to see whether
25 other individuals within my organization

1 4/11/16 - ENVIRONMENT - BILL 160110/RES.160211

2 have spoken to Liz on that subject.

3 COUNCILWOMAN BROWN: Okay.

4 COUNCILMAN GREEN: And I guess

5 the reason why I'm saying that,

6 considering that a number of the people

7 that have gone through her training

8 program who now have started businesses,

9 to the extent that they can maybe broaden

10 their business in not only doing energy

11 retrofits of homes but also maybe going

12 into the solar industry as well and maybe

13 also providing opportunity for joining

14 maybe IBEW as well.

15 So I think -- like I said

16 earlier, I'm a fan of not trying to

17 reinvent the wheel. So you already have

18 an organization that's working with a

19 number of returning citizens who now

20 either received jobs or actually started

21 their own businesses. To the extent they

22 can grow their business from doing not

23 just energy retrofits but now getting

24 involved in solar is still within the

25 umbrella of energy and also is another

1 4/11/16 - ENVIRONMENT - BILL 160110/RES.160211

2 way of helping -- it just provides
3 another product or service that that
4 business can go to a customer saying not
5 only can I help you reduce your energy
6 costs by making changes in your property,
7 but also there may be a way of providing
8 solar as well.

9 COUNCILWOMAN BROWN: I will
10 editorialize and underscore the
11 extraordinary work that Liz Robinson and
12 the Energy Coordinating Office do every
13 single day trying to make people's lives
14 better and doing it through the prism of
15 energy conservation and being authentic
16 about reaching to citizens who want a
17 second chance at life, like returning
18 citizens, and others who want to move in
19 a real tangible way to what we call
20 energy conservation. She is
21 extraordinary. That's my two cents.

22 Okay. Thank you very much for
23 your testimony.

24 We would now invite up our
25 staff representative from the

1 4/11/16 - ENVIRONMENT - BILL 160110/RES.160211

2 Philadelphia Federation of Teachers,
3 Hillary Linardopoulos, and Saleem
4 Chapman, Policy and Advocacy Manager for
5 the Sustainable Business Network, and
6 Walter Tsou, welcome back, President of
7 the Physicians for Social Responsibility.

8 (Witnesses approached witness
9 table.)

10 COUNCILWOMAN BROWN: Good
11 afternoon. Proceed with your testimony.
12 We'll start with the Philadelphia
13 Federation of Teachers, advocate
14 champion.

15 MS. LINARDOPOULOS: Thank you.
16 Good afternoon, Councilwoman and
17 Councilmen also. I'm Hillary
18 Linardopoulos with the Philadelphia
19 Federation of Teachers. I'd like to
20 thank the Committee on the Environment
21 and particularly Councilman Green for
22 inviting us to testify today and for his
23 initiative on the solar panel endeavor.

24 So we're very, very
25 appreciative of how laser-focused City

1 4/11/16 - ENVIRONMENT - BILL 160110/RES.160211

2 Council is on issues that affect our most
3 vulnerable citizens, our children.

4 Further, it is extremely significant that
5 many different committees are looking at
6 public education through a variety of
7 different lenses. This approach speaks
8 to how Council sees public education as
9 an issue that permeates well beyond the
10 Committee on Education. In order for
11 Philadelphia to move forward, we cannot
12 see our schools in isolation. So thank
13 you, Councilman Green, for not only
14 holding this hearing, but also for
15 holding hearings on facilities conditions
16 and asking pointed and significant
17 questions of the School District.

18 While PFT's involvement in the
19 solar panel initiative might seem far
20 fetched for some, it is because of the
21 leadership of PennEnvironment and this
22 City Council that we are able to
23 recognize that tying this initiative to
24 what goes on in our schools every day and
25 the overall fight for public education is

1 4/11/16 - ENVIRONMENT - BILL 160110/RES.160211

2 in fact very relevant.

3 There are very, very glaring
4 inequities in our schools. Today this is
5 the reality for so many children,
6 including well over half of our students
7 attending schools without full-time
8 nurses, 49 students -- although I heard a
9 modified number this morning, so I will
10 check on that -- 49 schools lacking a
11 full-time counselor, nearly 20 schools
12 with a nurse one day a week or less, and
13 oversized classes nearing 500.

14 Somewhere, in addition, the range of
15 about 175 to 185 vacancies remain,
16 meaning that there are classrooms across
17 the District where students have yet to
18 see a full-time teacher. This as
19 mandated testing begins today and schools
20 will be judged and students themselves
21 will be judged based on test scores in a
22 class that perhaps has never had a
23 full-time teacher.

24 All of this while the School
25 District lauds their immediate financial

1 4/11/16 - ENVIRONMENT - BILL 160110/RES.160211

2 stability. It was Councilman Green who
3 in Thursday's hearing said what so many
4 of us are thinking, that it is a very
5 mixed message that the District is
6 sending.

7 The solar panel initiative
8 provides a unique opportunity to engage
9 in an innovative funding mechanism that
10 will have a long-lasting fiscal impact on
11 our schools and perhaps even more
12 significantly a long-lasting
13 environmental impact on our city.

14 The PFT remains in full support
15 of this initiative, and we remain
16 grateful to PennEnvironment, our brothers
17 and sisters at IBEW, and City Council who
18 remain committed to seeing their role in
19 contributing to our children's education.

20 Thank you, and I'm happy to
21 answer any questions you might have.

22 COUNCILWOMAN BROWN: Okay.
23 We'll wait until we finish with our
24 panel.

25 Saleem Chapman.

1 4/11/16 - ENVIRONMENT - BILL 160110/RES.160211

2 MR. CHAPMAN: Good afternoon.

3 My name is Saleem Chapman and I'm the
4 Policy and Advocacy Manager at the
5 Sustainable Business Network of Greater
6 Philadelphia. SBN is a non-profit
7 membership organization for locally owned
8 businesses, committed not just to profit
9 but to making a positive social and
10 environmental impact through our
11 business. Our mission is to create an
12 economy in the Philadelphia region that
13 is based on those same principles, one
14 that is locally based, socially
15 equitable, and environmentally
16 sustainable.

17 I'm going to take the
18 Councilwoman's lead and go off script,
19 editorialize a little bit. I think a lot
20 of my colleagues have really spoke to the
21 stats and facts as to why this an
22 important thing to do, so I want to speak
23 personally.

24 I got into this line of work --
25 I went over to SBN after working many

1 4/11/16 - ENVIRONMENT - BILL 160110/RES.160211

2 years in environmental justice because I
3 believed that the next step of
4 environmental justice was really to put
5 to end the false choice between
6 environmental sustainability and economic
7 viability, and I think one way of doing
8 that is creating more viable job
9 opportunities for non-traditional
10 audiences, as I like to say.

11 When I started out as a high
12 school youth, I didn't see my career path
13 in environmental sustainability. I
14 happened here by happenstance, but I have
15 started to grow in this movement and
16 really have made a very passionate career
17 out of it that I've learned to enjoy, and
18 I think that other students would be able
19 to do the same thing if they were able to
20 get early industry exposure and see the
21 opportunities and career paths that are
22 available to them.

23 SBN has really seen this within
24 the green stormwater industry, and
25 there's great programs such as PowerCorps

1 4/11/16 - ENVIRONMENT - BILL 160110/RES.160211

2 Philadelphia that's really showing that
3 once you provide exposure to these new
4 industries, once you give people the
5 chance, they'll take advantage of it and
6 become passionate advocates for it.

7 Obviously I spend most of my
8 time advocating for these programs, but
9 I'll tell you that some of those
10 individuals in PowerCorps Philadelphia
11 can do a much better job of advocating
12 for those programs than I can, despite,
13 again, never seeing themselves in that
14 field as well. And so I think that this
15 opportunity, despite what the merits
16 might be, is an opportunity to have a
17 concrete dialogue about how we can move
18 that conversation forward, and for no
19 other reason, I think that we should
20 continue to explore it.

21 COUNCILWOMAN BROWN: Okay,
22 then. Thank you.

23 Good afternoon. Welcome back.

24 DR. TSOU: Good afternoon.

25 Thank you. Councilwoman Reynolds Brown

1 4/11/16 - ENVIRONMENT - BILL 160110/RES.160211

2 and members of the Committee on
3 Environment, thank you for this
4 invitation to speak today. My name is
5 Dr. Walter Tsou and I served as former
6 Health Commissioner of the City and of
7 past President of Philadelphia Physicians
8 for Social Responsibility.

9 I speak today in favor of the
10 urgent need to move away from fossil
11 fuels and to renewable energy sources.
12 The greatest public health and
13 environmental threat to all coastal
14 cities worldwide is climate change. The
15 urgency of keeping our global
16 temperatures rise well below 2 degrees
17 Celsius, as agreed upon at COP21 in
18 Paris, is well known, and Philadelphia
19 can join this effort in many ways, but
20 certainly increasing the use of solar
21 panels in public buildings, including our
22 schools, is a concrete and exciting way
23 for showing our young people that we
24 adults are working to make amends for our
25 past transgressions.

1 4/11/16 - ENVIRONMENT - BILL 160110/RES.160211

2 From a public health
3 perspective, we can reduce the burning of
4 fossil fuels, which contributes to air
5 pollution, nitrous oxide, sulfur dioxide,
6 smog, and asthma, which does contribute
7 to our overall healthcare costs.

8 The latter issue of asthma is
9 the leading medical reason for school
10 absenteeism. As a personal note, I have
11 a daughter at Masterman, as does
12 Councilman Taubenberger and Councilwoman
13 Gym, and my daughter repeatedly tells me
14 that the building is oppressively hot in
15 the winter and inadequately air
16 conditioned in the summer. No doubt we
17 waste a lot of energy in our schools,
18 which we are paying for as taxpayers.
19 Efforts to better control our energy
20 costs will undoubtedly save hundreds of
21 thousands of dollars in energy bills
22 alone, an imperative given our perennial
23 school deficit.

24 We also can save tremendous
25 amounts of money on our healthcare costs,

1 4/11/16 - ENVIRONMENT - BILL 160110/RES.160211

2 although I cannot guarantee or quantify
3 building solar panels in our schools in
4 terms of how much it might reduce our
5 health costs, but I do think it does
6 contribute to our overall health
7 benefits.

8 There are many more details of
9 benefits noted in the PennEnvironment
10 report. Supply expansions have resulted
11 in much more competitive pricing for
12 solar panels, and if it's amortized over
13 the life of the school building, it
14 starts to make a lot of sense.

15 So in overall, I'll shortly say
16 that I support the idea of creating solar
17 panels for our school buildings.

18 Thank you for the opportunity
19 to testify.

20 COUNCILWOMAN BROWN: Well, we
21 thank all of you.

22 And I want to ask Councilwoman
23 Gym.

24 COUNCILWOMAN GYM: Yes. Thank
25 you very much, Madam Chair.

1 4/11/16 - ENVIRONMENT - BILL 160110/RES.160211

2 And I have to say how much I
3 enjoy all three of your testimonies and
4 the contributions all three of you have
5 made to the City. It's been really
6 great.

7 So I wanted to direct one
8 question to Mr. Chapman, and in part
9 because we want to emphasize what a great
10 opportunity solar presents to all of us.
11 It's an expanded new technology. It's an
12 opportunity to think through business.
13 It's obviously going to think through how
14 we take a look at our schools. It's
15 going to impact climate change and all.
16 But I also think it's really important as
17 we venture into anything, and in part
18 it's why I'm particularly interested in a
19 partnership with SBN to kind of think
20 through the cold realities of how this
21 becomes very real in a way that actually
22 benefits diverse economic communities in
23 Philadelphia where we diversify the
24 contractors, where we ensure that people
25 in the labor aspect of it are benefiting,

1 4/11/16 - ENVIRONMENT - BILL 160110/RES.160211

2 that students in the apprenticeship
3 aspects are benefiting, that we're
4 improving our understanding of who
5 qualifies as a sustainable business in
6 Philadelphia, that we help
7 professionalize that standard. And I'm
8 wondering if you could maybe speak to
9 some of what you think might be the most
10 significant obstacles that City Council
11 in particular should look at with kind of
12 a very clear eye. So it's not to say
13 that we're not enthusiastic or hopeful
14 and optimistic about how this rolls out,
15 but I think the most important aspect of
16 this to do it well is to be very
17 forward-thinking and clear-eyed about
18 some of the significant obstacles that
19 currently face us, what we need, what are
20 some of the things that we need to move
21 on in order to make it particularly
22 successful, whether that's new
23 certification.

24 We don't currently, for
25 example, have local M/WBE certification

1 4/11/16 - ENVIRONMENT - BILL 160110/RES.160211

2 anymore and whether that's particularly
3 important to ensure the diversity of it.
4 And I think that SBN is trying to keep
5 its eye on all of that.

6 I don't expect you, by the way,
7 to answer all of this, but if there's
8 some way that maybe you could identify a
9 few and then work with the Committee and
10 be a voice in thinking through what we
11 need to be focused on in order for it to
12 be the kind of vision you see it as.

13 MR. CHAPMAN: Yeah. I would
14 love to get back to you more on the
15 specifics. I think what I can talk to
16 broadly is that in most cases the City as
17 long as -- with the colleagues of
18 advocacy is already doing a lot of great
19 work. I think opportunities like we have
20 here today where we can have a dialogue
21 to see all the different things that are
22 often going on in silos to really put
23 them all out front and have a continued
24 and concerted dialogue about that is the
25 important thing.

1 4/11/16 - ENVIRONMENT - BILL 160110/RES.160211

2 I think the one thing we need
3 to do is just to make sure we're actively
4 trying to engage other stakeholders and
5 making them realize why it's relevant to
6 them. It took me a really long time to
7 understand why sustainability was
8 important and relevant to my daily
9 existence, and that becomes even more
10 difficult when you're talking about
11 people who is facing social economic
12 challenges.

13 So I think to the extent that
14 we can produce it in realities where
15 we're showing like this isn't just about
16 environmental sustainability, this isn't
17 just about making the planet healthier,
18 which are all important goals, but there
19 are actually practical realities where
20 you can provide a viable career pathway
21 to individuals where they never thought
22 one was possible and showing them that
23 you may not even have to go to college to
24 do it. I mean, for a lot of people we
25 promote college and we want them to

1 4/11/16 - ENVIRONMENT - BILL 160110/RES.160211

2 certainly go that route, but just being
3 realistic, that's not an opportunity that
4 everybody can pursue, and letting them
5 know that even if you don't have the
6 opportunity to do that, there are other
7 opportunities available which can provide
8 a very high wage, family-sustaining
9 income. And I think solar energy is one
10 way of doing that.

11 And to your point, SBN will
12 continue to look at how we can produce
13 both policies and programming to making
14 sure that we are supporting the social
15 equity goals and supporting the business
16 community and making sure that we're
17 making all this a reality.

18 COUNCILWOMAN GYM: So I think
19 that the areas that I think I heard a
20 little bit -- I would also be very
21 interested in a community engagement
22 process around expanded -- this expansion
23 in this area, because I think it is
24 important to hear from people about how
25 they connect with it. I know I would be

1 4/11/16 - ENVIRONMENT - BILL 160110/RES.160211

2 interested in hearing from SBN at a later
3 time about -- one of the problems that we
4 sometimes have with government contracts
5 is that they tend to be so big that they
6 can't -- they're not accessible to
7 smaller entities and outfits. People
8 can't grow into a large contract. They
9 just either assume it -- which just
10 reinforces big winners for big contracts.
11 And this is a unique area where we are
12 probably not going to go to super large
13 scales right away. We're probably going
14 to take our time with it, make sure we're
15 doing it right, pilot it in a number of
16 different schools. And this is a
17 particularly important opportunity then
18 for us to ensure that smaller providers,
19 diverse providers, that we're getting
20 people in, that we're starting to grow
21 people into this business, and your
22 helping us think through how that's done
23 in a really responsible way is going to
24 be an important partnership, and I think
25 that is true for everybody in this

1 4/11/16 - ENVIRONMENT - BILL 160110/RES.160211

2 audience as well.

3 But this is one of the rare
4 opportunities I feel like where as you
5 look into new, expanding energy sources,
6 we have an opportunity to grow businesses
7 into that, and how we do that I think is
8 your mission, and to the extent that we
9 can figure out what that looks like is
10 extremely important from the outset, but
11 to be super proactive about what that's
12 going to look like, what the process is,
13 whether we need to do more engagement,
14 whether we need to do more workshops and
15 training.

16 The second thing that I think
17 would help a lot is for SBN to start
18 helping us identify the groups in your
19 networks who do actually connect to or
20 have capacity to connect with vibrant
21 apprenticeship programs that could
22 partner with our neighborhood public
23 schools. We are constantly thinking
24 through ways to make our neighborhood
25 high schools in particular vibrant, new

1 4/11/16 - ENVIRONMENT - BILL 160110/RES.160211

2 places of opportunity, and it seems like
3 if you know of businesses or partnerships
4 that you can recommend which already have
5 an existing relationship -- and
6 Ms. Linardopoulos, I think that this is
7 another area where PFT could help and
8 other institutions can help think through
9 who has existing apprenticeship programs,
10 who has got a good pipeline. If not
11 that, then how can we connect with the
12 existing CTE programs. We're already
13 hearing that a major trade doesn't really
14 have the program necessarily that it
15 takes, so let's see if we can make that
16 happen within some of our schools and the
17 partnerships with the CTE programs to see
18 if we can get full apprenticeships and
19 certifications going. And I'm sure that
20 there are other groups who are going to
21 be coming forward to doing that.

22 MR. CHAPMAN: Can I just
23 respond? So I would just say in terms of
24 your first point, we've worked with
25 Councilwoman Brown's office as well as

1 4/11/16 - ENVIRONMENT - BILL 160110/RES.160211

2 this Committee to really look at
3 procurement in general, and I think to
4 your point, this is an opportunity to
5 really model how the City in itself could
6 do better procurement and making sure
7 that we're providing scalable
8 opportunities to smaller businesses.

9 So we certainly look forward to
10 having that continued conversation. And
11 I don't want to tee him up, but SBN
12 member, Solar States, who is going to
13 testify on the next panel, has really
14 been working on a workforce development
15 program that they're trying to scale up,
16 and I certainly know that they would
17 probably be open to having that dialogue.

18 COUNCILWOMAN GYM: Great.

19 Thank you very much.

20 COUNCILWOMAN BROWN: Okay,
21 then. We thank you all for your
22 testimony.

23 And we invite up our last and
24 final panel, Jim Kurtz, President of RER
25 Energy Group; Micah Gold-Markel,

1 4/11/16 - ENVIRONMENT - BILL 160110/RES.160211

2 President Solar States; and Hannah
3 Miller, Field Energy Consultant for
4 SolarCity.

5 Is there anyone else who may
6 desire to testify on this bill once this
7 panel has concluded?

8 (No response.)

9 (Witnesses approached witness
10 table.)

11 COUNCILWOMAN BROWN: Good
12 afternoon, gentlemen.

13 (Good afternoon.)

14 COUNCILWOMAN BROWN: You can
15 state your name for the record, pull the
16 mic close to you, and proceed with your
17 testimony.

18 Hold on for one second. We're
19 commiserating here, because we don't want
20 to lose a quorum. We do want to take
21 action on the first bill, and the rules
22 require us to have a quorum. So we're
23 trying to capture the members one more
24 time before we proceed with your final
25 panel. Give us a couple more minutes.

1 4/11/16 - ENVIRONMENT - BILL 160110/RES.160211

2 (Brief pause.)

3 COUNCILWOMAN BROWN: So we're
4 going to recess only to move this measure
5 out of Committee, go into a meeting, and
6 then come back to the hearing, because we
7 simply want to move this off the
8 Calendar, at least for the first reading.

9 So there being no further
10 testimony on Bill No. 160110, I will
11 close our public hearing and recess to go
12 into a public meeting, and I would
13 recognize the co-sponsor of the bill,
14 Councilman Taubenberger, please.

15 COUNCILMAN TAUBENBERGER: Thank
16 you very much, Madam Chair. I move that
17 Bill No. 160110 be moved out of this
18 Committee with a favorable recommendation
19 and further move that the rules of
20 Council be suspended to allow first
21 reading on our public session.

22 COUNCILWOMAN BROWN: Is there a
23 second?

24 (Duly seconded.)

25 COUNCILWOMAN BROWN: It has

1 4/11/16 - ENVIRONMENT - BILL 160110/RES.160211

2 been moved and properly seconded that
3 Bill No. 160110 be reported from this
4 Committee with a favorable recommendation
5 and further moved that the rules of
6 Council be suspended to permit the first
7 reading of this bill at our very, very
8 next session of City Council.

9 All those in favor say aye.

10 (Aye.)

11 COUNCILWOMAN BROWN: Any
12 opposed?

13 (No response.)

14 COUNCILWOMAN BROWN: There
15 being none, the motion is carried and
16 Bill No. 160110 is moved out of this
17 Committee with a favorable recommendation
18 and further moved that the rules of
19 Council be suspended to permit first
20 reading of this bill at the next
21 scheduled session of City Council. And I
22 thank my Councilmembers.

23 We're now going to recess the
24 meeting and go back into the hearing so
25 that we can hear the remaining testimony

1 4/11/16 - ENVIRONMENT - BILL 160110/RES.160211

2 on our Resolution No. 160211.

3 Thank you. With that, we want
4 to ask our last panel to please state
5 your name for the record and proceed with
6 your testimony. Thank you.

7 MR. KURTZ: Thank you very
8 much.

9 COUNCILWOMAN BROWN: You're
10 welcome.

11 MR. KURTZ: Chairwoman Reynolds
12 Brown, Councilmember Green, and others,
13 thank you for this opportunity. My name
14 is Jim Kurtz. I am the President of RER
15 Energy Group and Sunvestment Energy
16 Group, which is specifically focused on
17 financing. Together, our organizations
18 have financed -- developed and financed
19 over \$100 million of projects since 2009.
20 We're currently working on \$15 million
21 worth of school projects specifically.

22 On a personal basis, I have
23 lived in Philadelphia, have gone to
24 school in Philadelphia, went to -- I've
25 spent some time on Wall Street -- please

1 4/11/16 - ENVIRONMENT - BILL 160110/RES.160211

2 don't hold that against me -- to have
3 hopefully learned a little bit about
4 financing. And we obtained a grant from
5 the Department of Energy, which is
6 specifically focused on how to have
7 schools, non-profits maximize their
8 savings opportunities over time. So I
9 want to share with you what I've learned
10 and hopefully can be helpful for your
11 endeavor, which we think is a very wise
12 endeavor.

13 How does solar work? Why do
14 investors want to invest in these
15 projects? Solar is characterized by
16 having high up-front costs,
17 unfortunately, but very reliable
18 production over time. And, importantly,
19 the high up-front costs have about 70
20 percent of those costs being reimbursed
21 or a value being given back to investors
22 over time. We'll talk about you, the
23 School District -- you, the Council
24 through the School District, will not
25 have to put this money up front, and

1 4/11/16 - ENVIRONMENT - BILL 160110/RES.160211

2 we're going to talk about how these
3 investors, why these investors make these
4 investments.

5 The investors who are putting
6 money in, again, are going to be getting
7 about 70 percent of their investment
8 value back from various incentives, tax
9 credit, depreciation, other state
10 incentives. And then you have an asset
11 that is so predictable, reliable, does
12 not have high operations costs.

13 I invested in a \$700,000 system
14 four years ago. I put in \$3,000 of
15 operations and maintenance since that
16 investment a few years ago. Extremely
17 reliable.

18 So once this reliable system is
19 working, it is capturing free fuel from
20 the sun. That's the driver of value.
21 And Christine Knapp emphasized that this
22 is a longer term play, and it is. The
23 free fuel will drive significant value.

24 If you simply look at the money
25 up front that needs to be put in, less

1 4/11/16 - ENVIRONMENT - BILL 160110/RES.160211

2 all these incentives, look at that net
3 investment versus the energy that's
4 generated over time, the effective cost
5 of energy, it would be three cents per
6 kilowatt hour, which is, without a doubt,
7 lower than what the School District is
8 paying today. The challenge is, you have
9 to get financiers to participate. And so
10 they will take some money out, so your
11 effective costs will be higher. But,
12 again, 70 percent of the up-front costs
13 are covered. Free fuel drives a lot of
14 value. That's what you're taking
15 advantage of.

16 Who are these investors? Why,
17 again, are they participating? They see
18 this consistent, predictable production.
19 They are getting warranties on the
20 modules knowing that the modules are
21 going to maintain 80 percent of their
22 production capability over 25 years.
23 That gets them very comfortable.

24 We've talked about the low
25 operations and maintenance costs. The

1 4/11/16 - ENVIRONMENT - BILL 160110/RES.160211

2 biggest risk to the investor is the
3 question of will the organization they're
4 working with pay some money over time.
5 They call it the credit risk, with the
6 off-taker of the energy, the site host of
7 the energy. And obviously we would feel
8 that the School District would be a very
9 high considered credit partner, would be
10 perceived to have low risk of non-payment
11 over time versus a smaller non-profit
12 that hasn't been around for a long time
13 that doesn't have a tax basis. So
14 investors are viewing you attractively.

15 How is this structured? You've
16 heard the term "power purchase
17 agreement," PPA before. So these
18 investors are putting money into a new
19 entity, it's an LLC entity, that you
20 would contract with to say if, and only
21 if, the solar array sends energy to you,
22 to the schools, you would have to pay for
23 it. You'd be paying lower than your
24 current rate. It would be a
25 pre-determined rate that has a fixed

1 4/11/16 - ENVIRONMENT - BILL 160110/RES.160211

2 escalator.

3 Importantly, the key aspects
4 for the School District, you don't put
5 the money up front. You don't have to
6 pay the operations of maintenance. The
7 investors do. You only are signing up to
8 pay for the energy as it's delivered. So
9 the risks are very well aligned. We
10 would envision through Office of
11 Sustainability, other organizations would
12 run an RFP to determine who would be the
13 developer of the project, and the
14 developer would bring in investors.

15 We advocate -- one of the
16 reasons why we got a grant from the
17 Department of Energy, we advocate
18 bringing in local investors. There has
19 been a lot of conversation here today
20 about using local workers, which we also
21 agree with. The comment about using
22 underutilized assets, the roof. We would
23 encourage you to consider local investors
24 as well, because local investors might
25 want to help the School District outside

1 4/11/16 - ENVIRONMENT - BILL 160110/RES.160211

2 of financial investors across the
3 country, who don't have as much vested
4 interest with you.

5 Again, the hundred million
6 dollars that we've been a part of, there
7 are, it's estimated, 32 very large
8 organizations that participate actively
9 in these investments, the Goldman Sachs
10 of the world, Bank of America and other
11 organizations. There are many both
12 banking institutions and businesses that
13 might want to get involved with your
14 project and keep the money local to
15 circulate it around in the local economy.

16 Importantly, these investors we
17 talked about are getting this tax credit.
18 It's worthwhile noting that the tax
19 credit was extended at the 30 percent
20 level this past December. It was
21 supposed to be reduced to 10 percent.
22 You effectively have another two and
23 three-quarters years to get that 30
24 percent level. It will take a long time
25 to work through all these details. This

1 4/11/16 - ENVIRONMENT - BILL 160110/RES.160211

2 is at least a year-plus project.

3 So after 30 percent, it steps
4 down for two years, but it will go to 10
5 percent over time. And the difference of
6 the investors getting a 30 percent tax
7 credit versus a 10 percent tax credit
8 obviously is 20 percent. The
9 PennEnvironment report estimated this is
10 \$150 million. Twenty percent of \$150
11 million is \$30 million.

12 So one of the reasons we would
13 advocate for you moving forward earlier
14 rather than later, it will take time to
15 work these projects out, make sure you're
16 capturing the full 30 percent before it
17 falls down.

18 So as I look at this -- we have
19 talked already to investors about the
20 potential for the project, and they say
21 absolutely, they would be interested in
22 the project. So there are investors who
23 would be willing to upfront this value
24 for you. We felt the PennEnvironment
25 report, which was very thorough and we

1 4/11/16 - ENVIRONMENT - BILL 160110/RES.160211

2 highly commend them for that effort, was
3 very conservative on the savings
4 estimates. I understand why they might
5 want to be conservative, but when we look
6 at the investors we deal with and with
7 the rates that were stated in that
8 report, I think that \$13 million over 30
9 years is a very, very conservative
10 estimate, and glad to help with analyzing
11 that more over time.

12 But in sum, others are willing
13 to pay for this. The risks for the
14 School District will be, only pay if the
15 energy is delivered. If the energy is
16 not delivered, you don't have to pay. So
17 you can capture a lot of savings.
18 There's a low level of risk, and we
19 commend you for pursuing this effort.

20 COUNCILWOMAN BROWN: Thank you
21 very, very much.

22 Good afternoon.

23 MR. GOLD-MARKEL: Good
24 afternoon. Good afternoon, Chairwoman
25 Reynolds Brown, Vice Chairwoman Bass,

1 4/11/16 - ENVIRONMENT - BILL 160110/RES.160211

2 Councilman Green, Councilman

3 Taubenberger. It's great to be here on

4 the Committee on the Environment. Thank

5 you for hosting today's hearing and a

6 special thank you to Councilman Green and

7 Chairwoman Reynolds Brown and your staffs

8 for your help generating momentum on this

9 critical issue of solar on schools. I've

10 been pushing and pulling towards this

11 moment for years now, so I'm very pleased

12 to be here.

13 My name is Micah Gold-Markel

14 and I founded a Philadelphia-based local

15 solar installation and education firm

16 named Solar States in 2008. We have a

17 head count of 18 wonderful employees.

18 When I was here talking about

19 procurement, we were at 16. So we've

20 added two since then.

21 And we have installed more than

22 200 solar arrays, and we're on track to

23 double our revenue this year. We are now

24 in multiple millions of dollars of

25 revenue.

1 4/11/16 - ENVIRONMENT - BILL 160110/RES.160211

2 Several weeks ago I listened to
3 the sincere needs of our young citizens
4 for jobs and prospects for their future
5 during Councilman Johnson's hearing on
6 youth violence.

7 I want you to know that I hire
8 young Philadelphians, ex-offenders,
9 PowerCorps service members, and
10 YouthBuild Philly Charter School
11 graduates. Currently -- and I'd like to
12 add we have several Community College of
13 Philadelphia employees as well, folks who
14 went through the solar training program.

15 Most of these folks have
16 troubled backgrounds in other
17 employers -- that other employers would
18 likely avoid, but we see the hard work
19 they are putting in to straighten out
20 their lives. We actively work with these
21 folks to ensure they are getting the
22 support they need beyond just a
23 good-paying job.

24 I'd like to take a moment to
25 recognize John Bowie, who is here with

1 4/11/16 - ENVIRONMENT - BILL 160110/RES.160211

2 Serenity House Solar. We have a
3 partnership with Serenity House where we
4 have two interns, Kai and Robert, who
5 have come to work with us, both from
6 North Philadelphia from the area that
7 Serenity House serves. Kai -- I gave her
8 this book. We do training on solar. I
9 gave her the book to help her start
10 training to get her certification, what's
11 called NABCEP certification. It's the
12 certification for solar installers. She
13 read it in one day and jumped to the head
14 of the class. This is a woman who was
15 previously homeless two years ago, and
16 she's incredible. She's going to start
17 working in our electrical division and
18 probably move right up into solar
19 installing very soon.

20 Additionally, I'd like to hire
21 something that's really exciting, which
22 is right next to our warehouse, which is
23 located at Jefferson and American Streets
24 in South Kensington, North Philadelphia
25 area. We've just signed an agreement of

1 4/11/16 - ENVIRONMENT - BILL 160110/RES.160211

2 sale on land, and we hope to do employee
3 housing as part of the project there.
4 Again, this is something that we've
5 identified because we've been in this
6 field for years now. Transportation
7 issues are a big problem for certain
8 employees who need to get to work early
9 in the morning. So I want to park a good
10 portion of our employees right next to
11 our shop so that we can have them there
12 right when we need to get to work in the
13 morning.

14 In addition to receiving
15 training on how to install solar, our
16 employees learn how to use a variety of
17 types of software, customer service
18 skills, and manage projects. Our goal is
19 to develop upper management employees
20 in-house and potentially have them spin
21 off and do solar on their own in an
22 entrepreneurial spirit.

23 We developed a solar education
24 curriculum with YouthBuild Philly Charter
25 School. We are one of the only solar

1 4/11/16 - ENVIRONMENT - BILL 160110/RES.160211

2 installation companies that has a dual
3 focus of installation and education, and
4 our curriculum creates a path to jobs in
5 the solar industry. We have also worked
6 with a number of public schools,
7 including the Science Leadership Academy
8 and the Workshop School now located in
9 West Philadelphia.

10 We pay a living wage, and we
11 can grow our impact. The solar industry
12 can hire more Philadelphians with your
13 help, which I'll return to at the end of
14 my testimony.

15 I want to highlight for you why
16 doing solar on schools and, for that
17 matter, all large buildings can be
18 literally a zero-cost proposition for
19 institutions like the School District and
20 other institutions that own real estate.

21 As Jim just noted, there is a
22 zero up-front cost to a power purchase
23 agreement, and I'm going to come back to
24 that number a lot, because I think that
25 this is the real opportunity here.

1 4/11/16 - ENVIRONMENT - BILL 160110/RES.160211

2 Solar States is also the owner
3 of what is called a power purchase
4 agreement. This is a contract between my
5 firm and the owner of the Crane Arts
6 building located on North American Street
7 just above Girard and 2nd. Our contract
8 leases the rooftop of the Crane to Solar
9 States for the purposes of placing 444
10 solar panels on the roof of the Crane.
11 That's an 82 KW solar array. Solar
12 States owns and maintains the array for
13 the 25-year term of the lease, which is
14 also the warranted life of the solar
15 panels. And I'd like to reiterate
16 something that Jim said here about
17 maintenance. I'd say we've spent -- and
18 I'll go over this a little later -- about
19 \$550,000 putting the array in, and we
20 probably spent in the realm of \$1,000
21 maintaining it over five years. I mean,
22 very little maintenance is necessary.

23 The contract also obligates the
24 Crane to buy energy from Solar States,
25 but it's a guaranteed 20 percent savings

1 4/11/16 - ENVIRONMENT - BILL 160110/RES.160211

2 every year. So every year they're saving
3 20 percent on PECO, and we pegged our
4 rate on the price to compare from PECO.

5 This gives the owner of the
6 Crane Arts a stable, low-cost energy
7 hedge that not only costs them zero
8 dollars, but it also guarantees them
9 savings going forward.

10 At the time of installation
11 five years ago, the Crane array cost
12 \$550,000, but the building owner paid
13 zero. I'll repeat that again. They paid
14 zero, and this is what we would like to
15 do with the School District, because we
16 understand that they're cash strapped.
17 We are not asking for any money out of
18 pocket.

19 Solar purchased through a PPA
20 costs the building owner zero up front
21 and can actually save them money over
22 time. As the owner of the array located
23 on the roof of the Crane, Solar States
24 secured funding for the array.
25 Additionally, Solar States monitors its

1 4/11/16 - ENVIRONMENT - BILL 160110/RES.160211

2 performance and handles any maintenance
3 and assures that it works. And this is
4 very important, because, again, as Jim
5 mentioned, this really aligns the power
6 purchase agreement investors with the
7 District, because their goal is to have
8 the solar array produce as much energy as
9 possible, because that's what gives them
10 a return on their investment, and the
11 District wants that same thing, because
12 they're getting more guaranteed savings
13 the more power that's there. Also, the
14 District may not have the expertise to
15 maintain it over time if it does need
16 maintenance, and the investor group does
17 have that through a contract with the
18 solar installer.

19 These activities are spelled
20 out in the PPA. Again, the building
21 owner pays zero.

22 There are also organizations
23 with the capital to fund millions of
24 dollars worth of solar PPAs, including
25 organizations like Jim's RER, but also

1 4/11/16 - ENVIRONMENT - BILL 160110/RES.160211

2 non-profits like the Sustainable Energy
3 Fund, who we currently work with. These
4 non-profits are mission-driven and would
5 make an excellent funding partner as
6 well.

7 The PPA on the Crane is an
8 example of one of the two financing
9 mechanisms noted in the excellent Solar
10 on Schools report put together by
11 PennEnvironment. I've personally visited
12 multiple schools and spec'd out PPAs that
13 could work on their roofs. I believe
14 that five to ten schools could have
15 solar-generated power and real
16 educational opportunities for students
17 with, again, zero out-of-pocket costs,
18 and this could happen very quickly.

19 This would be a shot in the arm
20 for the School District, as it would
21 generate not only great energy but
22 fantastic press, something that is sorely
23 needed. All that is needed is roof
24 access, some brief analysis work, and a
25 PPA that leases the rooftop space. As

1 4/11/16 - ENVIRONMENT - BILL 160110/RES.160211

2 you might imagine, this would also mean
3 family-sustaining pay and work for
4 Philadelphians.

5 There are some newer school
6 buildings which are great candidates
7 because they are designed with
8 energy-efficient features in place. So I
9 completely agree that energy efficiency
10 is first, but we have that already in a
11 number of our buildings. So they're
12 ready for solar. For older buildings,
13 solar can be considered in concert with
14 energy audits and other efficiency
15 upgrades.

16 Back to my company, Solar
17 States. Listening to Councilman
18 Johnson's hearing on youth violence, I
19 heard your frustration with people in
20 suits discussing workforce readiness
21 training and I heard the call for the
22 solution, jobs for Philadelphians.

23 The renewed public sector
24 interest in energy efficiency due to
25 recent public policy initiatives,

1 4/11/16 - ENVIRONMENT - BILL 160110/RES.160211

2 principally the Philadelphia Energy
3 Campaign and the Solar on Schools effort
4 we are discussing today, offers the
5 potential for real workforce development
6 and employment growth in local solar, and
7 I am eager to help and to hire more.

8 Just to bring a little anecdote
9 about today, I brought with me -- this is
10 called a -- let me get the name right.
11 It's a combination between a jaw and an
12 ornament, so it's called a jawment, and
13 it was made -- uniquely Philadelphian
14 saying, I think. It was made at the
15 Workshop School in West Philadelphia,
16 where this morning we had a discussion
17 about how important solar is. Mayor
18 Kenney was gracious enough to attend, as
19 well as Council President Clarke. And I
20 brought this here because the students
21 there are learning about solar. We're
22 working with them as well to have a
23 training program for solar. We have
24 these programs in place, and we are going
25 to grow organically. We're at 18 folks.

1 4/11/16 - ENVIRONMENT - BILL 160110/RES.160211

2 Probably by the end of the year we'll be
3 closer to 30. And I'm hoping over the
4 next few years, we get up to 50, but we
5 can employ 100, 200 folks locally, and
6 this is so key, because this seems to be
7 the focus of everyone on Council, but
8 it's also our focus as well, how do we
9 get these jobs to the folks who need them
10 most. And so we will be pushing for
11 local employment. That's what we're all
12 about.

13 So I'd like to invite you on a
14 tour of our PPA at the Crane Arts
15 building. I would love to show you this
16 magnificent solar array and how it works.
17 If we take the next steps laid out in the
18 PennEnvironment report, we can see solar
19 on schools as well as jobs for
20 Philadelphians in the near future, and
21 that's key. It needs to happen now. We
22 can't wait any longer for these jobs.
23 They're within our grasp, and it's up to
24 us to take this moment and squeeze it and
25 get it right. Let's become a national

1 4/11/16 - ENVIRONMENT - BILL 160110/RES.160211

2 model. Let's make it happen.

3 Thank you very much.

4 COUNCILWOMAN BROWN: Thank you
5 very, very much, the both of you, for
6 your very compelling testimony, and it's
7 really a no-brainer. It's just a matter
8 of us figuring out how we get it right if
9 we are authentic about trying to save the
10 lives of the type of men and women
11 Councilman Johnson is talking about.

12 So I want to -- I know
13 Councilman Green may have questions or
14 comments, but just thank him again for
15 elevating this in a way that prior to the
16 PennEnvironment report, it's been
17 whispered about, but it's never been put
18 on the radar screen in a real strategic,
19 tangible, in-your-face way where all of
20 us can look to see what the opportunities
21 are and then approach those opportunities
22 in a way that really addresses this 26
23 percent poverty rate.

24 Councilman Green.

25 COUNCILMAN GREEN: Thank you,

1 4/11/16 - ENVIRONMENT - BILL 160110/RES.160211

2 Madam Chair.

3 Too often the City operates in
4 silos and doesn't work in a collaborative
5 or holistic way, and when you mentioned
6 some of the impact of Councilman Johnson
7 and Councilman Jones' hearing on youth
8 violence in reference to gun violence, it
9 kind of brought home this more holistic
10 approach that we need to have with the
11 City. I've said it probably five times
12 today about leveraging assets, because we
13 need to do a better job in doing that and
14 how we can use our assets like our school
15 buildings to help both environment, job
16 opportunities, and also health in the
17 City of Philadelphia.

18 And this conversation reminds
19 me of conversations I was having a little
20 while ago in reference to ESCO projects,
21 or energy savings contracts. And
22 Governor Rendell had already used ESCO
23 contracts for GSA buildings in
24 Harrisburg, and it took a long time for
25 the City to move forward on doing ESCO

1 4/11/16 - ENVIRONMENT - BILL 160110/RES.160211

2 projects. We're finally doing one now
3 with NORESCO for the quadplex, which
4 includes this building, Municipal
5 Services Building, One Parkway, and the
6 Criminal Justice Center. And so when I
7 think of the idea of solar panels on
8 school buildings, it's another
9 opportunity to do things in a more
10 creative way and let's not focus on what
11 we can't do but what we can do.

12 So I'm curious in reference to
13 from both of your experiences, one, what
14 have you seen in other jurisdictions in
15 reference to solar panels? I think one
16 initial reluctance aspect I think you
17 both spoke about in reference to this
18 belief is the cost investment of getting
19 involved in solar panels or solar and we
20 have limited resources, so how can we
21 even do -- we have limited resources for
22 our existing capital projects, how can we
23 do something even different than what we
24 currently do. And that, once again,
25 speaks to not being creative and not

1 4/11/16 - ENVIRONMENT - BILL 160110/RES.160211

2 looking at P3's like a power purchase
3 agreement.

4 So if you could speak on what
5 other jurisdictions are doing regarding
6 power purchase agreements.

7 MR. GOLD-MARKEL: I mean, we
8 see a lot of PPAs in New Jersey, and a
9 big reason for that is the SREC market.
10 And so they --

11 COUNCILWOMAN BROWN: Is the
12 what market?

13 MR. GOLD-MARKEL: SREC. That
14 stands for, I'm sorry, the Solar
15 Renewable Energy Certificate. We have a
16 problem in Pennsylvania where our SRECs
17 are very low, and that's principally due
18 to the Alternative Energy Portfolio
19 Standard. That's a big problem. We
20 absolutely should go to our State
21 Legislature and try to fix that. And if
22 we do, I think the number one thing that
23 we have to say to our state
24 legislators -- and we should really only
25 say one thing -- and that's close the

1 4/11/16 - ENVIRONMENT - BILL 160110/RES.160211

2 borders to Pennsylvania. And what that
3 means is -- and I wrote an op-ed about
4 this, so pardon me if I go off a little
5 bit. But what that means is, in
6 Pennsylvania we had a
7 ratepayer-subsidized SREC market, meaning
8 from about 1999 to 2004, we saw a tax on
9 our electric bills to subsidize this SREC
10 market. What's happening, instead of
11 Pennsylvania getting these jobs as a
12 result, we're having folks from North
13 Carolina sell their SRECs into our
14 market, because they don't have an SREC
15 market there because their legislature
16 didn't support such an idea. They're
17 selling it in and they're taking
18 essentially this Pennsylvania taxpayer
19 money and they're transferring it to
20 North Carolina to create jobs. It's
21 shameful. It is shameful. So we need to
22 fix that. So that's one of the reasons
23 why we see a lot more PPAs in New Jersey
24 than in Pennsylvania.

25 That said, this is a solvable

1 4/11/16 - ENVIRONMENT - BILL 160110/RES.160211

2 problem now. We can do PPAs now. We can
3 make the math work, because the cost of
4 solar has come down so significantly
5 because of creative investment vehicles
6 like Mr. Kurtz brought up where we can
7 bring in community investors, where we
8 can use these tax credits, but we need to
9 get moving sooner rather than later.
10 That 30 percent tax credit is going to go
11 away, and it takes a while for these
12 things to mature and to happen.

13 So really the urgency is now.
14 It's let's figure out how to do this now.
15 We can do it now. How do we do it.
16 Let's get the RFPs going. Let's get the
17 School District on this. And I know
18 there are a lot of fires. Everybody is
19 looking around, there's no money in the
20 budget for this, there's problems at the
21 District for that, but if we constantly
22 put out fires rather than sort of setting
23 the stage for what's next, we're never
24 going to get anywhere. And we need to
25 start thinking about how do we improve,

1 4/11/16 - ENVIRONMENT - BILL 160110/RES.160211

2 not just put out fires.

3 COUNCILWOMAN BROWN: Sure.

4 MR. KURTZ: We think alike. I
5 was going to emphasize some of those
6 points, and I think if you can assist
7 with the concept of walling off the state
8 for our SRECs as different conversations
9 happen, that would be very wise. But
10 Micah's point about that not leading to
11 you stopping currently is a very, very
12 good point.

13 If you address that issue,
14 there could be more savings to the
15 school. The SRECs would be even more
16 valuable. But it can work today.

17 And more on that, you first
18 asked about the perspective of other
19 municipalities, school districts that
20 we're talking to. We just completed the
21 largest PPA in Iowa. We're doing PPAs
22 across New York. We've done them in
23 Maryland, and we have done them in
24 Pennsylvania as well. And as we're out
25 and about traveling, people say, How is

1 4/11/16 - ENVIRONMENT - BILL 160110/RES.160211

2 your hometown state doing?

3 And I say, Well, it's very
4 interesting. There is a perception
5 problem. And the perception problem is
6 the state grants have gone away and,
7 therefore, it doesn't work anymore. It
8 was even commented early on about those
9 state grants being there.

10 When we started in 2009, state
11 grants provided up to 20 to 30 percent of
12 the cost of the project. Since that
13 time, prices for the entire system have
14 dropped 60. You have lost 20 to 30.
15 You've gained 60. You're in a better
16 situation.

17 So, again, you have no reason
18 to hold back. Because you only have --
19 because this is complicated, more
20 feedback -- I have presented to many
21 councils and boards and so forth. It is
22 never a one-time conversation, as I'm
23 sure you're going to find out, to get
24 these things understood. This concept of
25 we don't have to put any money up front,

1 4/11/16 - ENVIRONMENT - BILL 160110/RES.160211

2 what are our obligations, these contracts
3 are complicated. You are not allowed to
4 shade your roof. There are certain
5 aspects that you need to read the details
6 of. So these are 50, 60-page contracts.
7 Other organizations are potentially going
8 to put \$150 million into this. They're
9 not going to do that without a long
10 process, a tight contract. But it's
11 worth your interest, because exactly what
12 was emphasized, how well it's aligned.
13 Those investors are not going to get
14 their money fully back unless they're
15 producing energy. You only have to buy
16 when energy is being produced.

17 So there's good alignment.
18 There is not the need to have state
19 grants. The prices have come down
20 enough. We would encourage you to
21 advocate for walling off our state so
22 that North Carolinians cannot come in,
23 because that will give you more savings
24 over time, but you should be going ahead
25 now, because it will take a little time

1 4/11/16 - ENVIRONMENT - BILL 160110/RES.160211

2 to work out all these details, but
3 there's a lot of savings to be had.

4 COUNCILMAN GREEN: Thank you
5 for your comments. As a grandson of a
6 North Carolinian, I have some -- I hear
7 your concern and perspective, although we
8 still have farm down there.

9 But what you say -- to me
10 sometimes I think it's maybe something in
11 the water, maybe it's our Quaker
12 sensibility that we are very reluctant to
13 doing things, because the same
14 conversation -- I mean, I can repeat the
15 same conversation I had with people with
16 the founders of Recyclebank and the
17 challenges in getting that done, and they
18 were started in Philadelphia, were doing
19 much more work outside of Philadelphia,
20 then in Philadelphia.

21 Right now we're looking at
22 ideas of social impact bonds and a Pay
23 for Success model. TRF is an entity that
24 was started in Philadelphia. Four of the
25 11 Pay for Success bonds have been done

1 4/11/16 - ENVIRONMENT - BILL 160110/RES.160211

2 outside of the region. Once again,
3 there's reluctance. And I'm really -- it
4 just really is frustrating and
5 challenging, because I often try to think
6 things outside of the box and try to look
7 at things in a creative way, especially
8 when we have limited resources and
9 assets.

10 So the concept of recommending
11 to the General Assembly to close our
12 borders to others, even though they may
13 be from North Carolina, is something that
14 I think from a legislative perspective is
15 something that this body should probably
16 do as well.

17 Thank you.

18 COUNCILWOMAN BROWN: Yes.

19 MR. KURTZ: One more comment
20 that hasn't been talked about much today,
21 and I just want to make sure that this
22 perspective is shared. It was shared
23 earlier about prices being at a 12-year
24 or 17-year low, I've heard, because
25 natural gas prices have been low. I

1 4/11/16 - ENVIRONMENT - BILL 160110/RES.160211

2 would encourage you to also do additional
3 research -- we've done it. We'd be glad
4 to follow up and share more -- of what
5 the forward prices for natural gas are in
6 the United States in this area.

7 Natural gas is the driver of
8 electric prices. Oil is often what we
9 all see because we go get gas. Oil
10 represents 1 percent of electric
11 generation in America. So it's natural
12 gas that is the driving price factor.
13 And, yes, natural gas is at a 12- or
14 17-year low. However, we have just
15 converted a major import facility to an
16 export facility in Louisiana. There are
17 pipelines that are being built to take
18 our natural gas from this Marcellus
19 Pennsylvania area up into England. The
20 prices for natural gas are double or
21 triple in Europe or Asia versus the
22 United States. And so this is a
23 commodity, and capitalistic forces are
24 doing what they do, and they are going to
25 get that natural gas to other markets

1 4/11/16 - ENVIRONMENT - BILL 160110/RES.160211

2 where the price is higher.

3 The forward curve -- this is
4 not any predictions of academics or us as
5 a business person. Financial traders on
6 Wall Street who predict the price of
7 natural gas seeing it doubling by the
8 year 2023. And so that is going to be
9 the driver of your electricity prices.
10 And so there might be people who say,
11 Electric prices haven't increased a whole
12 lot. They haven't recently, but they're
13 going to because of the price of natural
14 gas is going to be increasing.

15 So it's not as much pain, but
16 this opportunity for long-term savings
17 will be there in addition to the
18 opportunity for job growth and other
19 aspects that have been mentioned. So I
20 just wanted to have that perspective on
21 natural gas and your long-term prices.

22 MR. GOLD-MARKEL: If I may just
23 add a little bit on to that. There were
24 dire predictions two, three years ago.
25 Well, if energy prices drop, the solar

1 4/11/16 - ENVIRONMENT - BILL 160110/RES.160211

2 industry is going to go away because they
3 can't compete on price, and that's what's
4 called -- what we call grid parity.

5 Solar can't be the same price as our
6 natural gas-produced electricity. Well,
7 in fact the opposite has happened. We've
8 had a tremendous price drop, and solar
9 grows by 100 percent every few years.

10 It's still tremendous growth in the
11 industry despite the headwinds of very
12 low energy costs. And this should tell
13 us something about where the industry in
14 terms of solar is going.

15 COUNCILWOMAN BROWN: Read the
16 tea leaves.

17 MR. KURTZ: Free fuel from the
18 sun. Hard to beat that price.

19 COUNCILWOMAN BROWN:
20 Councilman.

21 COUNCILMAN TAUBENBERGER: Madam
22 Chair, thank you very much. In full
23 disclosure, I do not have anyone related
24 to me in North Carolina, but, gentlemen,
25 I do want to thank you and all the other

1 4/11/16 - ENVIRONMENT - BILL 160110/RES.160211

2 folks who have testified. You've
3 enlightened us, and I think the
4 opportunity for modern technology, for
5 saving dollars, for creating jobs, for
6 helping people get out of poverty, it's
7 so very, very important, and we look
8 forward to working with you.

9 I do personally -- I speak, I'm
10 sure, for other folks on this
11 Committee -- to make this not just an
12 idea, but really come to fruition.

13 Thank you very much.

14 MR. GOLD-MARKEL: Thank you.

15 COUNCILWOMAN BROWN: Closing
16 comments by the sponsor of the
17 resolution, Councilman Green.

18 COUNCILMAN GREEN: Once again,
19 one of the things -- I often have a long
20 memory about things, and this
21 conversation reminds me when I first
22 started my career as a small business
23 lender at Meridian Bank and we had what
24 was called -- a card called the Advantage
25 Card and it was a Visa debit card. And

1 4/11/16 - ENVIRONMENT - BILL 160110/RES.160211

2 this is in the early '90s. And because
3 it had a Visa logo on it, people assumed
4 it was a credit card with a rate of
5 interest, and when I tried to tell
6 people, no, this is a Visa debit card,
7 meaning you can access your checking
8 account, people were like what's the
9 interest rate? What's the monthly
10 payment?

11 I said, No, it's just a Visa
12 debit card.

13 Now that's something that's
14 commonplace, everyone has. And it makes
15 me think about solar and energy as some
16 of these renewables, that when you have a
17 resource like the sun and when the cost
18 of the installation continues to go down,
19 more and more people are going to use
20 this technology going forward because of
21 the ability to do it, because it's going
22 to be more cost effective and people are
23 more comfortable with the technology.

24 I live in Mount Airy. Seeing
25 charging stations for electric cars is

1 4/11/16 - ENVIRONMENT - BILL 160110/RES.160211

2 not something that's odd. My sister has
3 an electric car and she lives in
4 California. So these things are
5 happening. It's just getting more people
6 comfortable with it.

7 So I think the consumer market
8 is there. The challenge is can we get
9 the public sector to also embrace some of
10 these technologies, because on the
11 commercial side, they've been using ESCOs
12 all kinds of types of ways to reduce
13 costs, because they see that as a way of
14 reducing their expenses, because that's
15 another way of enhancing the bottom line.
16 We now need to get the public sector to
17 do the same.

18 So thank you.

19 COUNCILWOMAN BROWN: This is a
20 win-win-win-win. There's no doubt about
21 it. And, Micah, you can count me in. My
22 office will take you up on your offer to
23 come tour.

24 MR. GOLD-MARKEL: Great.

25 COUNCILWOMAN BROWN: This has

1 4/11/16 - ENVIRONMENT - BILL 160110/RES.160211

2 been extremely inspirational for sure,
3 but educational and quite a teachable
4 moment. For those of us who care about
5 sustainability and the environment, this
6 was a great class this afternoon. We
7 thank you all for your testimony.

8 This concludes our hearing on
9 Bill No. 160110 and Resolution No.
10 160211.

11 Have a great afternoon. Thank
12 you.

13 I should state for the record
14 that I've been advised and instructed
15 that Resolution No. 160211 will be placed
16 on hold to the call of the Chair.

17 Thank you.

18 (Committee on the Environment
19 concluded at 3:50 p.m.)

20 - - -

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25

CERTIFICATE

I HEREBY CERTIFY that the
proceedings, evidence and objections are
contained fully and accurately in the
stenographic notes taken by me upon the
foregoing matter, and that this is a true and
correct transcript of same.

MICHELE L. MURPHY
RPR-Notary Public

(The foregoing certification of this
transcript does not apply to any reproduction
of the same by any means, unless under the
direct control and/or supervision of the
certifying reporter.)

Committee on the Environment
April 11, 2016

Page 1

A	129:20	122:15	agree 42:18	alternative	25:25 31:13	approach	124:3 148:5
abatement	activists	154:24	124:21	48:4 50:6	36:8,9,10	98:7 140:21	152:19
75:25	64:16	advantages	137:9	51:16 54:16	39:12,16	141:10	Assembly
ability 19:13	activities 28:7	34:8	agreed 40:13	57:11,17	40:23 41:17	approached	150:11
33:20 56:12	135:19	advised	104:17	75:12	42:3,7 43:6	5:10 31:16	assess 9:14
155:21	activity 73:22	157:14	agreement	143:18	anecdote	47:13 63:23	asset 121:10
able 25:11	actual 33:18	advocacy	53:17,24	alternatives	138:8	97:8 116:9	assets 53:4
32:14 38:3	acute 9:13	60:12 64:14	54:5 56:6	1:15 2:25	Angeles 35:9	appropriate	82:3,3,4,5
42:23 61:10	Adam 46:19	83:18,23	123:17	3:8 4:19	35:11 37:23	59:24 89:20	124:22
86:23 87:5	47:20 55:20	97:4 101:4	130:25	6:13 7:5	87:12	approved	141:12,14
89:25 90:4	55:22 60:20	109:18	132:23	12:19 13:19	announced	91:5	150:9
98:22	Adam's 55:18	advocate	133:4 135:6	13:25 14:11	81:17	approximat...	assist 9:14
102:18,19	add 13:7	97:13	143:3	16:13	annual 72:18	70:13	48:14 146:6
absenteeism	25:23	124:15,17	agreements	aluminum	annually 9:4	April 1:7	assistance
105:10	129:12	126:13	65:21 143:6	3:14	73:22	15:14	50:2
absolutely	152:23	148:21	ahead 90:8	Amanda	answer 14:13	area 27:12	associated
30:6 31:5	added 40:2	advocates	148:24	46:17 47:22	26:15 55:11	64:17 73:23	19:9
60:10	128:20	103:6	aimed 69:15	55:9 60:20	100:21	77:23 87:5	associations
126:21	adding 1:15	advocating	aims 11:2	amending	109:7	87:21 93:14	34:17
143:20	4:18	103:8,11	12:4	1:14 4:16	anticipate	111:23	assume 112:9
academics	addition 8:20	affect 98:2	air 12:9 33:19	amends	30:12	112:11	assumed
152:4	10:4 34:9	afternoon 2:3	33:20 63:19	104:24	anymore	114:7 130:6	155:3
Academy	35:20 50:4	2:16 5:13	68:20,23	America 6:23	109:2 147:7	130:25	assures 135:3
45:9 132:7	99:14	5:25 6:6	69:3 70:18	49:3,23	apart 35:14	151:6,19	assuring 41:3
accelerated	131:14	11:17 31:19	70:22 71:3	125:10	appear 6:10	areas 111:19	asthma 71:5
53:4	152:17	31:24 47:16	71:13 73:2	151:11	applaud 11:3	arm 61:2	71:8 105:6
accept 24:12	additional	64:2,6 77:9	74:19 83:19	American	applies 54:9	136:19	105:8
acceptance	26:18,19	77:10 97:11	93:24 105:4	59:4 75:5	apply 158:21	array 50:13	asthmas
27:18 50:25	40:18 44:17	97:16 101:2	105:15	130:23	appreciate	84:15	71:10
access 136:24	46:6 65:23	103:23,24	airport 21:2,5	133:6	appreciation	123:21	attacks 71:10
155:7	76:6 151:2	116:12,13	21:11,12,16	ammunition	60:8	133:11,12	attainment
accessible	Additionally	127:22,24	23:4 39:15	9:25	arm 61:2	133:19	70:24
112:6	8:12 130:20	127:24	42:19	amortized	68:11	134:11,22	attempt
accommoda...	134:25	157:6,11	Airy 155:24	106:12	appreciative	134:24	38:16 87:18
26:18	additions	Agalloco	Al 1:12 2:17	amount 12:4	97:25	135:8	attend 138:18
account 9:3	24:25	46:19 47:20	2:21	23:21 37:3	apprentice	139:16	attended
155:8	address 41:8	55:20,21,23	Albert 45:9	38:8,9,10	77:20 80:7	arrays	87:25
accumulation	146:13	55:23 60:23	aligned 81:19	38:10 39:21	85:10,16	128:22	attending
13:14	addresses	61:22	124:9	76:8	87:8,20	Arts 133:5	99:7
accurately	10:16 78:9	agencies	148:12	amounts	90:25	134:6	attention
158:5	140:22	13:24 57:7	alignment	23:13	apprentices	139:14	83:2
achieve 10:11	addressing	Agency 93:12	148:17	105:25	80:10	Asia 151:21	attractive
achieving	54:24	aggravates	aligns 12:7	analysis 27:3	apprentices...	asked 35:7	53:10
3:24	Administra...	71:7	135:5	27:5 45:23	63:20 84:18	146:18	attractively
acres 72:15	56:15,17	ago 40:10	alike 146:4	136:24	86:5 87:15	asking 13:18	123:14
act 37:17	59:25	61:23 79:18	allow 57:21	Analyst	88:7,23	13:20 98:16	auction 8:23
50:18 75:21	adopt 10:10	89:11	65:22 76:9	46:18 47:22	91:4,24	134:17	8:24
Acting 29:16	adoption 48:5	121:14,16	80:17	analyze 15:24	108:2	aspect 83:25	audience
action 51:18	adults 104:24	129:2	117:20	analyzing	113:21	107:25	44:13 113:2
116:21	advance 75:5	130:15	allowed 148:3	127:10	114:9	108:15	audiences
actions 58:13	75:22 80:17	134:11	allowing	and/or	apprentices...	142:16	102:10
actively 110:3	advantage	141:20	68:13	158:23	86:20 91:21	aspects 85:17	audits 137:14
125:8	103:5	152:24	allows 75:13	Anderson 5:8	114:18	89:3 108:3	authentic

Committee on the Environment
April 11, 2016

Page 2

96:15 140:9	basics 38:6	112:10,10	86:1 87:1	111:20	brought	127:20,25	152:5
authorizing	38:11	131:7 143:9	88:1 89:1	120:3 144:5	34:19 69:6	128:7 140:4	154:22
1:17 47:3	basis 11:3	143:19	90:1 91:1	152:23	138:9,20	143:11	businesses
available	18:24	bigger 79:5	92:1 93:1	bled 58:2	141:9 145:6	146:3	95:8,21
6:16 14:10	119:22	biggest 57:13	94:1 95:1	Block 50:19	Brown 1:10	150:18	101:8 113:6
40:2 51:23	123:13	123:2	96:1 97:1	BLONDELL	2:2 4:22	153:15,19	114:3 115:8
72:15	Bass 1:10	bill 1:14 2:15	98:1 99:1	1:10	5:12,19 6:3	154:15	125:12
102:22	2:19 22:4,6	2:20 3:1 4:1	100:1 101:1	boards	6:6 11:4,12	156:19,25	buy 23:17,18
111:7	23:23 63:9	4:14,15 5:1	102:1 103:1	147:21	11:20 14:15	Brown's	39:7 133:24
average 61:9	63:10	6:1,11 7:1	104:1 105:1	Bob 25:24	15:19 16:5	114:25	148:15
71:6 73:12	127:25	8:1 9:1 10:1	106:1 107:1	body 150:15	16:15,23	budget 41:24	buying 3:23
avoid 72:6	baton 14:17	11:1,5,8,23	108:1 109:1	boiler 44:8	18:7,11	59:20	69:24
129:18	Beach 4:6	12:1,4,16	110:1 111:1	bold 67:7	19:22 20:24	145:20	Byrne 46:17
aware 29:20	bear 20:19	13:1 14:1,8	112:1 113:1	bona 87:23	21:15,24	build 53:25	47:22 55:9
29:23 56:25	bears 20:14	15:1 16:1	114:1 115:1	bonds 149:22	22:20 23:25	88:22	62:9,16
awareness	beat 153:18	17:1 18:1	116:1,6,21	149:25	25:3 26:6	building	63:6
28:7 67:13	begins 99:19	18:16,20	117:1,10,13	book 130:8,9	28:6,21	47:11 79:19	
aye 118:9,10	behalf 5:6	19:1 20:1	117:17	borders	29:9,13	105:14	C
	31:12 78:4	21:1 22:1	118:1,3,7	57:21 144:2	30:7,19,24	106:3,13	calculating
B	belief 142:18	23:1 24:1	118:16,20	150:12	31:6,10,18	133:6	49:17
back 9:22	believe 15:15	25:1 26:1	119:1 120:1	bottom	36:6 39:10	134:12,20	Calendar
20:23 22:4	24:10 27:24	27:1 28:1	121:1 122:1	156:15	40:3,17	135:20	117:8
26:21 27:4	136:13	29:1 30:1	123:1 124:1	Bowie 129:25	41:15,22	139:15	California
29:24 30:3	believed	31:1 32:1	125:1 126:1	box 85:2,4	42:4,9,25	142:4,5	35:10 87:13
31:2 38:6	102:3	33:1 34:1	127:1 128:1	150:6	43:9,16	building's	156:4
41:19 44:21	benefit 79:14	35:1,25	129:1 130:1	brass 9:25	46:8,11	54:17	call 66:14,21
55:14 79:17	80:15	36:1,21	131:1 132:1	break 37:12	47:15 55:5	buildings	67:3 96:19
97:6 103:23	benefiting	37:1,5 38:1	133:1 134:1	breaks 76:3	55:17,22,24	53:22 66:12	123:5
109:14	107:25	39:1 40:1	135:1 136:1	bridge 86:16	58:11,20	67:2 82:5	137:21
117:6	108:3	41:1 42:1	137:1 138:1	brief 43:15	59:23 60:11	82:22 84:11	153:4
118:24	benefits	43:1,19	139:1 140:1	117:2	60:16,19	84:15 88:3	157:16
120:21	64:21 67:15	44:1 45:1	141:1 142:1	136:24	61:19 62:6	104:21	called 30:8
121:8	76:14 106:7	46:1,24	143:1 144:1	briefly 78:11	62:14 63:4	106:17	84:8 94:18
132:23	106:9	47:1 48:1	145:1 146:1	bring 15:10	63:7,11,25	132:17	130:11
137:16	107:22	49:1 50:1	147:1 148:1	44:17 55:16	64:9 68:12	137:6,11,12	133:3
147:18	best 17:25	51:1 52:1	149:1 150:1	73:7,20	68:16 76:24	141:15,23	138:10,12
148:14	24:4 39:7	53:1 54:1	151:1 152:1	81:10 89:21	77:4 80:23	142:8	153:4
backgrounds	45:25 53:15	55:1 56:1	153:1 154:1	124:14	83:6 85:8	built 86:23	154:24,24
129:16	56:6 71:22	57:1 58:1	155:1 156:1	138:8 145:7	85:13,20	151:17	calls 32:25
ban 3:4	better 19:8	58:23 59:1	157:1,9	bringing	87:17 88:11	bulk 52:7	40:15
Bank 125:10	40:20 96:14	60:1 61:1	billion 73:21	81:20 83:2	88:14 89:4	burning	campaign
154:23	103:11	62:1 63:1	bills 61:8,9	124:18	89:7 90:14	105:3	63:16 64:7
banking	105:19	64:1 65:1	65:11	broaden 95:9	92:20 94:16	business 5:8	69:20 138:3
125:12	115:6	66:1 67:1	105:21	broader 7:15	95:3 96:9	21:2 24:14	campuses
barriers 49:6	141:13	68:1 69:1	144:9	14:4	97:10	31:14 39:13	34:23
50:5	147:15	70:1 71:1	bins 34:23	broadly	100:22	59:11 69:18	candidates
based 27:6	beyond 98:9	72:1 73:1	39:14	109:16	103:21,25	95:10,22	137:6
56:10 73:13	129:22	74:1 75:1	bipartisan	bronchitis	106:20	96:4 97:5	capability
99:21	bid 8:2 20:6	76:1 77:1	59:10 67:21	71:9	115:20	101:5,11	122:22
101:13,14	20:16,20	78:1 79:1	bit 19:13,19	Brotherhood	116:11,14	107:12	capacity 7:15
basically	bids 20:23	80:1 81:1	26:15 34:5	63:21 77:8	117:3,22,25	108:5	39:20 90:7
25:17 51:17	big 61:20	82:1 83:1	62:17 86:12	brothers	118:11,14	111:15	113:20
57:18 58:2	86:14 112:5	84:1 85:1	101:19	100:16	119:9,12	112:21	capital
61:10							135:23

Committee on the Environment
April 11, 2016

Page 3

capitalistic 151:23	122:5	13:5 37:9	56:20	61:8,17,23	clear 3:20	109:17	42:15
capture 61:10	centuries 13:17	110:12	Christine 5:2	64:11 66:9	40:5 108:12	collect 24:14	140:14
116:23	century 6:14	149:17	5:25 11:16	66:21 67:6	clear-eyed 108:17	42:23	149:5
127:17	certain 4:20	challenging 36:23 52:4	11:18 46:16	68:3,13	Clerk 4:13,15	collected 10:2	154:16
captures 85:17	25:11 27:21	52:11 150:5	47:17	71:16 73:3	46:24 47:2	25:9 38:9	commercial 38:25 69:7
capturing 121:19	34:19 131:7	Chambers 2:4	121:21	73:6 76:8	climate 70:10	collection 12:25 25:24	156:11
126:16	148:4	champion 97:14	chronic 70:22	76:15 81:11	70:20 71:14	27:20,22	commiserat... 116:19
car 156:3	certainly 25:6	chance 29:2	71:9	81:20 82:6	71:24 72:5	34:16,22	Commissio... 4:25 5:16
card 154:24	27:14 28:18	96:17 103:5	Cina-Sklar 63:16 64:3	97:25 98:22	72:7 104:14	collective 69:24	5:17,21,22
154:25,25	29:23 35:10	change 41:5	64:5,6 94:9	100:13,17	107:15	collectively 72:16	6:5,9 15:13
155:4,6,12	35:24 41:23	70:10 71:15	94:21	104:6 107:5	close 37:6	college 89:8	15:23 16:8
cardboard 34:2	58:9 59:22	71:24 72:5	Cindy 1:10	108:10	43:13 57:21	110:23,25	16:21 17:4
care 42:15	67:7 104:20	72:7 80:12	2:19	109:16	116:16	129:12	18:23 19:11
157:4	111:2 115:9	86:23 87:6	circulate 125:15	118:21	117:11	combination 52:12	21:9,19
career 80:18	115:16	104:14	cities 4:4 18:8	141:3,11,17	143:25	138:11	22:16,22
102:12,16	87:23	107:15	29:19 35:17	141:25	closely 48:10	come 16:11	29:17,22
102:21	143:15	changes 59:12 80:7	52:25 53:11	City's 7:19	81:19	20:23 21:21	30:6,15,22
110:20	158:2	96:6	70:19	12:2,20,23	closer 5:20	33:2 35:16	31:5 104:6
154:22	certification 90:23	Chapman 97:4 100:25	104:14	48:2,25	25:4 31:22	35:23 40:15	commitment 66:11,16
Carolina 144:13,20	108:23,25	101:2,3	citizen-based 64:14	61:5 65:6	139:3	41:24 62:23	commitments 15:4
150:13	130:10,11	107:8	citizens 34:18	73:17 74:6	closing 76:11	77:14 80:15	committed 13:23 14:19
153:24	130:12	109:13	93:3,14	City-owned 53:22 54:2	154:15	117:6 130:5	100:18
Carolinian 149:6	158:20	114:22	95:19 96:16	citywide 7:24	co-benefits 54:22	132:23	101:8
Carolinians 148:22	certifications 114:19	Chapter 1:14	96:18 98:3	8:12,22 9:5	co-sponsor 18:21	145:4	Committee 1:3,17 2:6
carried 118:15	CERTIFY 158:3	4:16	129:3	9:18 13:24	117:13	148:19,22	6:7 11:21
cars 155:25	certifying 158:24	characterized 120:15	city 1:2,6 2:4	22:18	co-sponsored 2:20	154:12	18:13 22:3
case 78:25	Chair 1:10	charge 32:24	2:6,24 3:5	Clarena 40:12	coal 70:16	156:23	29:8 30:8
89:24	26:9 28:25	34:25 40:12	3:18 5:18	clarifying 91:18	74:10	comes 25:17	47:3 60:2
case-by-case 18:24	29:12 44:3	40:16	5:22 6:9,18	clarity 89:25	Coast 36:2	40:20 73:24	77:13 97:20
cases 109:16	56:3 81:4	charging 155:25	6:23 7:3,9	90:6,20	coastal 104:13	comfort 54:23	98:10 104:2
cash 23:20	85:24 86:4	charter 74:23	8:13 9:22	Clarke 81:16	Code 1:14	52:18	109:9 115:2
134:16	92:23	92:4 129:10	9:24 10:9	138:19	4:17	122:23	117:5,18
catastrophic 72:7	106:25	131:24	12:7,14,18	class 78:2	coffee 34:2	155:23	118:4,17
catch 42:7	117:16	check 99:10	13:19 14:6	85:11,16	cold 33:21	156:6	128:4
categories 3:11	141:2	checking 155:7	15:18,25	99:22	107:20	collaboration 93:20 94:6	154:11
causes 70:18	153:22	Chestnut 45:8	16:10 22:10	classroom 86:10,11	collaborative 141:4	114:21	157:18
Celsius 104:17	157:16	child 82:16	22:14,15,25	88:8	collaborativ... 10:5	46:9 127:2	committees 98:5
center 38:21	Chairwoman 11:20 64:9	children 46:2	23:7 32:20	classrooms 99:16	colleague 2:21	127:19	commodities 7:8 16:2
47:7 142:6	68:11	71:5 98:3	32:23 36:2	clean 8:4	colleagues 2:5	comment 94:19	25:20 41:4
central 61:15	119:11	99:5	36:14 37:2	59:17 63:19	14:18 47:20	150:19	commodity 22:18 26:24
cents 96:21	127:24,25	children's 100:19	40:15,16,19	68:20 69:3	57:4 58:17	commented 147:8	27:18
	128:7	choice 102:5	42:18 45:5	71:17 73:2	101:20	comments	151:23
	challenge 51:24 122:8	Christie	45:13 46:2	74:19 83:19			
	156:8		46:18,22	93:24			
	challenges		48:18,19				
			49:3,13,18				
			50:5,7,8				
			52:5 53:8				
			54:2,9,12				
			54:20 61:3				

Committee on the Environment
April 11, 2016

Page 4

commonly 3:2	148:3	127:3,5,9	context 14:4	158:23	80:16 122:4	139:7	23:23,25
commonpla... 155:14	complies 8:3	consider 86:19	continue 45:12,22,23	conversation 2:9 15:11	132:22	Council's 2:6	25:3 26:6
Commonwe... 45:2 67:21	complying 21:7	124:23	48:14 64:23	42:21 44:5	134:11	10:24	28:6,21
75:13	component 3:15 83:21	considerable 67:15	83:3 103:20	44:8 45:12	142:18	Councilman	29:9,13
communica... 62:24	components 37:13	considered 4:2 123:9	continued 109:23	45:22 56:23	145:3	1:11,12	30:7,19,24
communities 49:24	comprehen... 12:3 48:2	137:13	115:10	64:24 93:10	147:12	2:19,21	31:6,10,18
107:22	computer 33:8	considering 54:14 95:6	continues 49:18 50:24	94:15	155:17,22	18:14,15	31:23 36:6
community 63:18 68:19	concept 81:19	consistent 122:18	69:13 74:8	103:18	cost-compet... 51:2	19:4,16,21	39:10 40:3
69:5 80:5	146:7	consists 50:13	contract 7:11	115:10	cost-effective 73:16	22:5 24:2,3	40:17 41:15
89:8 111:16	147:24	84:18 86:9	8:16,18	124:19	cost-effectiv... 12:21	24:18 26:4	41:22 42:4
111:21	150:10	constantly 44:16	17:20 21:11	141:18	cost-efficient 53:13	26:6,8 27:2	42:9,25
129:12	89:13 149:7	113:23	21:14 22:18	147:22	costs 3:6 34:6	28:5,24	43:9,16
145:7	concerns 7:21	145:21	23:5 36:15	149:14,15	45:7 48:21	29:6,12,14	46:8,11
companies 36:12 51:3	concert 137:13	constituent 71:2	36:17,19	154:21	49:6 54:21	29:15,25	47:15 55:5
132:2	concerted 109:24	constructed 38:3	41:2 112:8	conversations 20:11 56:14	65:24 70:2	32:18 34:15	55:17,22,24
company 32:2 37:24	concessions 7:7	construction 7:7 8:6 9:9	123:20	62:12,19	72:2 96:6	44:2 46:9	58:11,20
53:24 58:25	concluded 116:7	Consultant 116:3	133:4,7,23	93:19 94:7	105:7,20,25	46:10 55:25	59:23 60:11
137:16	concludes 157:19	consume 54:3	135:17	94:13,23	106:5	56:2 64:9	60:16,19
compare 134:4	concludes 157:8	consumer 156:7	148:10	141:19	120:16,19	68:12 81:2	61:19 62:6
compared 52:8 53:10	concrete 3:22	consumers 52:18	contracted 7:8 23:6	146:8	120:20	81:3 92:21	62:14 63:4
compelling 140:6	103:17	consuming 22:9	contracting 15:25	converted 151:15	121:12	92:22 95:4	63:7,9,10
compendium 17:25	conditioned 105:16	consumption 3:12 6:17	contractor 8:2	coordinate 62:11,19	122:11,12	97:21 98:13	63:11,25
compete 153:3	conditions 4:21 36:23	70:15	contractors 107:24	coordinated 74:11	122:25	100:2	68:16 76:24
competitive 18:18,22	48:22 50:22	contained 158:5	contracts 7:2	Coordinating 93:12 96:12	134:7,20	105:12	77:4 80:23
19:6,7,10	98:15	container 5:7	7:4,25 8:13	coordination 10:20	136:17	117:14,15	83:6 85:8
19:12 57:19	conducted 6:25	31:12,25	8:15 9:19	COP21 104:17	153:12	128:2,2,6	85:13,20,23
75:2 106:11	congratulate 40:24	40:6,14	9:23 23:2	core 86:24	156:13	129:5	86:18 87:17
competitive... 51:19	connect 111:25	containers 32:25 33:7	112:4,10	corporate 34:23	Council 1:2	137:17	88:11,14,15
complete 11:14	113:19,20	34:8 37:15	141:21,23	Corporation 5:7 31:13	2:4 30:5	140:11,13	88:20,25
completed 146:20	114:11	contains 66:13	148:2,6	31:25	44:10,11	140:24,25	89:4,7,16
completely 137:9	consensus 6:15	contaminant 37:20	contribute 105:6 106:6	correct 21:10	49:14 63:19	141:6,7	90:14,19
compliance 21:18	conservation 50:19 96:15	contaminat... 37:4,7	contributed 40:14	30:23 85:19	64:11 68:13	149:4	91:8,12,17
complicated 147:19	conservative	content 8:16	contributes 70:13 105:4	89:6 158:8	68:20 69:3	153:20,21	92:7,10,20
			contributing 64:15	correctly 55:18 85:9	69:5,8,13	154:17,18	94:16 95:3
			100:19	corrugated 38:11	69:17,22		96:9 97:10
			contributions 107:4	cost 7:6 19:2	73:2,3,6,14	2:18 119:12	97:16
			control 9:5,6	34:4 49:15	74:19 76:15	Councilme...	100:22
			50:12	49:16 50:17	76:15 81:16	Councilme...	103:21,25
			105:19	50:23 53:14	83:19 85:22	2:17 118:22	105:12
				54:18 66:24	88:7 93:24	Councilmen	106:20,22
				67:12 79:22	93:25 98:2	councils	106:24
					98:8,22	147:21	111:18
					100:17	Councilwo...	114:25
					108:10	1:10,10,11	115:18,20
					117:20	2:2,18 4:22	116:11,14
					118:6,8,19	5:12,19 6:3	117:3,22,25
					118:21	6:6 11:4,12	118:11,14
					120:23	14:15 15:19	119:9
					138:19	16:5,15,23	127:20
						18:7,11	140:4
						19:22 20:24	143:11
						21:15,24	146:3
						22:4,6,20	150:18

Committee on the Environment
April 11, 2016

Page 5

153:15,19 154:15 156:19,25 Councilwo... 101:18 counselor 99:11 counselors 65:17 count 128:17 156:21 country 36:13 44:24 67:10 72:22 74:17 86:25 125:3 County 32:5 couple 32:17 33:14 35:6 40:10 59:13 89:11 116:25 course 44:20 89:12 court 21:3 cover 65:4 76:7 covered 122:13 covering 50:14 craft 20:6 crafting 18:20 Crane 133:5 133:8,10,24 134:6,11,23 136:7 139:14 create 10:15 10:21 17:11 67:4 74:4 101:11 144:20 created 15:24 58:4 93:7 creates 19:12 132:4 creating 17:6 65:12 66:5 93:5 102:8 106:16 154:5	creation 6:21 creative 45:24 142:10,25 145:5 150:7 credit 53:3 54:8 121:9 123:5,9 125:17,19 126:7,7 145:10 155:4 credits 56:12 66:19 75:10 76:6 145:8 crews 41:9 Criminal 142:6 criteria 57:24 critical 128:9 crucial 71:3 74:13 87:4 CTE 114:12 114:17 cup 32:10 33:17,23 cupping 34:3 cups 32:9,11 32:13 34:5 39:5 curbing 71:24 curbside 24:8 24:9,16,21 25:9,23 27:22 35:8 36:3 37:4 37:10,22 38:16,22 39:4 curious 30:2 142:12 current 13:4 35:7 36:15 41:2 48:21 52:21 123:24 currently 8:14 9:11 24:16 49:21 51:21 91:13 108:19,24 119:20	129:11 136:3 142:24 146:11 curriculum 84:18 86:24 87:15 91:7 131:24 132:4 curve 152:3 customer 96:4 131:17 customers 51:5 69:10 cycle 36:16 D daily 110:8 Dart 5:7 31:12,25,25 32:23,25 34:10,20 35:15 40:7 40:13 42:20 data 61:10 73:14 date 34:19 49:21 daughter 105:11,13 David 81:8 day 4:25 5:16 5:17,21,21 6:5,8 15:13 15:23 16:8 16:21 17:4 18:23 19:11 19:20 20:3 21:9,19 22:16,22 29:22 30:6 30:15,22 31:5 41:12 78:8 79:4 80:9 92:3 96:13 98:24 99:12 130:13 day-to-day 61:7 days 72:2 DC 4:7 deal 127:6 death 71:25	debit 154:25 155:6,12 debris 3:16 December 125:20 decide 24:14 decided 20:5 79:18 decision 26:25 decisions 19:14,23,24 deep-level 55:13 deeper 20:25 83:24 deficit 105:23 defines 8:4 definitely 41:18 definition 18:18,21 degrades 13:12 degrees 104:16 Delegation 60:4 delivered 124:8 127:15,16 deliveries 41:12 delivery 79:23 delve 83:24 demand 27:9 69:16 demands 6:16 demograph... 74:6 demonstrate 76:19 dent 71:22 department 2:13 4:11 7:17 8:8 10:2,5,12 11:7 13:24 14:20 18:17 20:2 23:8 24:5 27:13	28:18 32:24 35:20 40:11 40:24 41:6 41:19 49:3 49:24 50:21 62:13,20,25 88:5 89:10 120:5 124:17 Departmen... 50:11 departments 9:12,18,20 13:18 15:6 15:11,18 16:9,12 41:25 42:10 61:12 departments' 15:9 Depot 39:7 depreciation 53:4 121:9 Derek 1:11 2:19 description 60:21 design 78:6 79:16 designation 49:22 designed 137:7 designers 78:17 desire 116:6 desks 2:8 desperately 80:20 despite 69:12 103:12,15 153:11 details 51:15 68:8 72:11 106:8 125:25 148:5 149:2 determine 124:12 detrimental 3:16 devalues 37:8 develop 49:10	51:3 76:18 131:19 developed 57:22 119:18 131:23 developer 54:7 124:13 124:14 developers 49:10,19 50:5 76:2 development 5:9 31:14 48:11 49:7 51:14 53:23 70:10 74:12 74:21 79:3 83:20,21,25 84:7 115:14 138:5 Devoted 91:8 91:10 diagnosed 71:5 dialogue 15:22 16:22 103:17 109:20,24 115:17 diesel 8:5,10 difference 126:5 different 17:18 27:6 35:4 78:10 87:18 98:5 98:7 109:21 112:16 142:23 146:8 difficult 25:4 28:3 35:12 37:25 110:10 dig 20:25 83:24 diligently 37:3 dioxide 105:5 dire 152:24 direct 19:7,17 53:6 72:20	73:21 107:7 158:23 direction 3:19 directly 12:15 54:3 Director 5:3 11:18 46:16 47:18 63:18 63:20 68:20 Directors 17:24 dirtier 71:18 disadvantage 52:23 disclosure 153:23 discuss 64:25 discussing 137:20 138:4 discussion 25:13 58:9 138:16 discussions 60:3 diseases 71:8 displace 71:18 Displacing 71:20 disposal 9:15 disposed 13:9 distinguishes 79:6 distributed 78:18 distribution 78:21 84:23 district 34:15 44:6,10,11 44:15 45:18 46:7 47:9 48:8,11 52:6 54:13 65:3,22 66:2,9 67:4 73:4,7 76:16 81:13 81:23 91:22 92:2 98:17 99:17,25 100:5 120:23,24	122:7 123:8 124:4,25 127:14 132:19 134:15 135:7,11,14 136:20 145:17,21 District's 65:10 District-ma... 92:12 districts 52:25 146:19 diverse 74:8 107:22 112:19 diversify 107:23 diversion 12:9 diversity 109:3 divided 48:17 division 27:14 28:19 130:17 document 30:11 31:4 documented 3:10 DOE 79:7 doing 14:23 15:12,21,22 18:9 42:2 45:19 56:7 61:7 82:17 83:11 84:5 85:7 89:15 91:13 93:2 95:10,22 96:14 102:7 109:18 111:10 112:15 114:21 132:16 141:13,25 142:2 143:5 146:21 147:2 149:13,18
--	--	--	--	---	--	---	--

Committee on the Environment
April 11, 2016

Page 6

151:24 dollars 9:4 65:9 73:21 105:21 125:6 128:24 134:8 135:24 154:5 dominant 72:8 double 34:3,5 71:6 73:11 128:23 151:20 doubling 152:7 doubt 105:16 122:6 156:20 Dr 103:24 104:5 dramatic 41:5,21 dramatically 78:23 drill 21:6 drinks 32:12 drive 24:15 57:14 121:23 driver 121:20 151:7 152:9 drives 51:7 122:13 driving 151:12 drop 24:12 32:21 50:24 152:25 153:8 drop-off 38:20,21 39:18,21 40:6 drop-offs 38:18 dropped 147:14 dual 132:2 due 51:9 137:24 143:17	Duly 117:24 dumpster 32:21 E E-procure... 17:9 eager 138:7 earlier 29:18 30:5 81:17 95:16 126:13 150:23 early 69:17 102:20 131:8 147:8 155:2 earn 77:25 earth 9:15 East 36:2 ECA 93:8 economic 26:16 52:16 64:21 70:9 73:22 76:13 79:10,14 80:15 102:6 107:22 110:11 economically 52:14 economics 52:10 economy 67:16 68:3 101:12 125:15 Ed 31:24 40:3 42:14 editorialize 96:10 101:19 Edmonds 44:9 educated 70:3 education 90:12 98:6 98:8,10,25 100:19 128:15 131:23 132:3 education-...	28:2 educational 65:17 66:5 72:20 136:16 157:3 Edward 5:6 31:11 effect 3:12 effective 7:6 122:4,11 155:22 effectively 54:21 125:22 effectiveness 66:24 78:20 effects 3:13 71:16 efficiency 50:19 54:15 54:17 61:16 78:20,22 79:13 137:9 137:14,24 efficient 53:14 effort 11:10 14:4 40:25 104:19 127:2,19 138:3 efforts 4:12 7:19,23 41:20 48:25 105:19 either 40:21 57:24 93:11 95:20 112:9 EKG 9:8 electric 144:9 151:8,10 152:11 155:25 156:3 electrical 63:21 77:8 78:6,16,21 79:16 84:23 86:14 89:3 130:17 electrician 88:19	electricity 50:15 51:3 52:2,7,8,13 54:3,5,10 61:5 65:5 65:11 72:13 72:18 73:18 73:24 76:8 79:23 85:4 152:9 153:6 Elementary 44:9 elevated 70:22 elevating 140:15 elevator 60:21 eliminated 8:21 embrace 156:9 emission 70:14 emissions 8:11 emitter 70:11 emphasize 107:9 146:5 emphasized 121:21 148:12 emphysema 71:8 employ 139:5 employee 131:2 employees 10:9 32:6 62:5 93:7 128:17 129:13 131:8,10,16 131:19 employers 129:17,17 employment 138:6 139:11 enacted 4:8 encourage 14:10 16:13 35:24 51:14	54:14 69:20 124:23 148:20 151:2 encouraging 12:18 83:22 84:2 end-of-the-L... 9:7 endeavor 97:23 120:11,12 ends 34:4 energy 3:11 45:7 46:17 46:21 47:11 47:20,22,23 48:4,6 49:4 49:25 50:7 50:19 51:16 51:25 53:16 53:19 54:16 54:17 56:16 57:11,18 58:3 59:17 60:24 61:2 61:16,18,24 66:16,17,18 66:19 67:14 67:20,24 69:4,5,9,11 69:14 70:15 71:18,21,21 71:25 72:8 72:8,13,24 73:8,13 74:3,7,13 75:9,12,20 75:23 76:6 76:11 78:19 81:17 90:13 93:4,12 95:10,23,25 96:5,12,15 96:20 104:11 105:17,19 105:21 111:9 113:5 115:25 116:3 119:15,15 120:5 122:3	122:5 123:6 123:7,21 124:8,17 127:15,15 133:24 134:6 135:8 136:2,21 137:9,14,24 138:2 141:21 143:15,18 148:15,16 152:25 153:12 155:15 energy-effic... 54:20 energy-effic... 137:8 energy-inte... 50:16 enforce 8:8 enforcement 16:19 engage 2:9 100:8 110:4 engagement 111:21 113:13 engineers 78:17 England 151:19 enhancing 156:15 enjoy 60:5 102:17 107:3 enlightened 154:3 ensure 7:5 21:6 49:19 89:23 107:24 109:3 112:18 129:21 ensuring 74:13 enter 54:4 entering 53:24 enters 13:11	enthusiastic 67:20 108:13 entire 55:7 77:17 147:13 entities 52:25 53:16 112:7 entitled 1:14 4:17 entity 123:19 123:19 149:23 entreprene... 131:22 entreprene... 93:6,8 entreprene... 93:17 environment 1:3,17 2:7 3:1,22 4:1 5:1 6:1,8 7:1 8:1 9:1 10:1,19,25 11:1 12:1 13:1,12 14:1 15:1 16:1 17:1 18:1 19:1 20:1 21:1 22:1 23:1 24:1 25:1 26:1 27:1 28:1 29:1 30:1 31:1 32:1 33:1 34:1 35:1 36:1 37:1 38:1 39:1 40:1 41:1 42:1 43:1 44:1 45:1 46:1 47:1,4 48:1 49:1 50:1 51:1 52:1 53:1 54:1 55:1 56:1 57:1 58:1 59:1 60:1 61:1 62:1 63:1 64:1 65:1	66:1,7 67:1 67:17 68:1 68:2 69:1 70:1 71:1 72:1 73:1 74:1 75:1 76:1 77:1 78:1 79:1 80:1 81:1 82:1 83:1 84:1 85:1 86:1 87:1 88:1 89:1 90:1 91:1 92:1 93:1 94:1 95:1 96:1 97:1 97:20 98:1 99:1 100:1 101:1 102:1 103:1 104:1 104:3 105:1 106:1 107:1 108:1 109:1 110:1 111:1 112:1 113:1 114:1 115:1 116:1 117:1 118:1 119:1 120:1 121:1 122:1 123:1 124:1 125:1 126:1 127:1 128:1,4 129:1 130:1 131:1 132:1 133:1 134:1 135:1 136:1 137:1 138:1 139:1 140:1 141:1,15 142:1 143:1 144:1 145:1 146:1 147:1 148:1 149:1 150:1 151:1 152:1 153:1 154:1 155:1 156:1 157:1 157:5,18 environmen... 3:9,13 6:20 7:20 12:17
--	--	---	--	--	--	--	--

Committee on the Environment
April 11, 2016

Page 7

13:22 14:5 64:14,20 68:21 70:9 76:14,21 100:13 101:10 102:2,4,6 102:13 104:13 110:16 environmen... 10:22 101:15 envision 124:10 EPS 12:6,12 12:16,19,21 12:25 13:7 13:10,19 14:2,11 26:12 29:20 equip 79:19 equipment 9:10,10 78:7 79:13 equitable 101:15 equity 111:15 equivalent 70:6 escalator 124:2 ESCO 141:20 141:22,25 ESCOs 156:11 especially 81:12 93:13 150:7 essentially 60:25 144:18 estate 132:20 estimate 127:10 estimated 125:7 126:9 estimates 73:15 127:4 Europe 151:21 evaluate 26:11	evaluation 26:16,23 everybody 62:21 111:4 112:25 145:18 evidence 158:4 ex-offenders 129:8 exacerbated 71:14 exact 92:5 exactly 32:12 86:5 148:11 examine 1:18 47:5 example 11:6 13:20 20:8 23:4 69:16 74:18 87:7 108:25 136:8 examples 7:23 excellent 136:5,9 exception 38:21,22 excessive 6:16 excited 66:2 80:9 exciting 104:22 130:21 excluding 49:16 execute 17:2 Executive 8:3 existence 110:9 existing 49:20 114:5,9,12 142:22 expand 26:11 38:14 expanded 1:15 2:25 4:19 12:5 37:13 38:19 107:11 111:22 expanding	15:17 67:20 113:5 expands 86:20 expansion 111:22 expansions 106:10 expect 16:24 109:6 expectation 16:16 83:8 expedited 76:9 expense 46:5 expenses 44:19,25 81:22 82:10 156:14 experience 48:10 experiences 142:13 expert 25:25 27:13 expertise 40:21 87:22 135:14 experts 27:15 55:13 explore 54:13 75:20 103:20 exploring 53:20 61:17 explosion 44:9 export 151:16 expose 82:14 82:18 exposed 70:22 exposure 72:21 102:20 103:3 express 68:10 expressed 35:22 extend 79:8 extended 125:19 extensive	66:22 extent 82:9 95:9,21 110:13 113:8 extract 38:4 38:13 extraordina... 96:11,21 extreme 36:22 extremely 36:23 37:25 98:4 113:10 121:16 157:2 extremes 71:13 extruded 12:5 eye 108:12 109:5 F face 108:19 facilitating 15:8 facilities 12:23 36:13 48:8,24 50:7 52:21 52:22 54:21 61:17 98:15 facility 13:6 24:10 27:23 32:4 39:20 59:6 151:15 151:16 facing 110:11 fact 24:6 35:23 68:7 99:2 153:7 factor 151:12 facts 101:21 failing 94:19 fair 30:11 falls 126:17 false 102:5 familiar 37:21 38:20 family 35:5 77:18 family-sust... 111:8 137:3	fan 95:16 fantastic 136:22 far 36:4 49:2 51:13 57:3 75:3 98:19 farm 69:7 149:8 fastest 72:21 74:16 favor 36:20 78:3 104:9 118:9 favorable 117:18 118:4,17 features 137:8 federal 52:21 53:3,8 54:8 56:12 70:24 Federation 97:2,13,19 feedback 41:7 94:4 147:20 feel 19:8 59:18 113:4 123:7 fees 49:18 feet 50:14 felt 126:24 etched 98:20 fide 87:23 field 103:14 116:3 131:6 fight 98:25 figure 94:5 113:9 145:14 figuring 140:8 fill 74:15 final 115:24 116:24 finally 67:3 82:13 142:2 finance 53:5 financed 119:18,18 financial 75:22 82:4 99:25 125:2	152:5 financially 25:22 financiers 122:9 financing 47:9 65:20 119:17 120:4 136:8 find 12:18 13:18 20:12 68:5 92:8 147:23 finding 68:9 finish 100:23 fire 86:16 fires 145:18 145:22 146:2 firing 10:2 firm 128:15 133:5 firms 38:25 first 4:3,25 11:15 17:5 32:17 36:2 43:21 46:14 50:9 54:17 55:18 58:24 59:20 66:14 69:6 78:14 83:15 84:14 114:24 116:21 117:8,20 118:6,19 137:10 146:17 154:21 firsthand 79:17 80:5 fiscal 100:10 five 41:13 84:11 133:21 134:11 136:14 141:11 five-year 91:3 fix 143:21 144:22 fixed 123:25 flack 42:8	flexible 19:13 Florida 4:6 foam 6:13,25 7:4 13:11 22:19 32:8 33:16 34:8 34:9 35:5 focus 83:3 84:20 86:11 87:5 132:3 139:7,8 142:10 focused 109:11 119:16 120:6 focuses 71:17 folks 30:10 32:10 35:4 35:17,19,21 94:14 129:13,15 129:21 138:25 139:5,9 144:12 154:2,10 follow 29:16 37:19 77:6 94:13,24 151:4 follow-up 30:8 43:4 followed 5:5 16:18 following 10:13 75:21 food 10:17 21:3 23:17 33:6,11 forces 151:23 foregoing 158:7,20 foreseeable 13:8 Forgive 29:13 formed 69:5 former 104:5 formerly 62:2 formula 44:15 forth 2:22 147:21	Fortunately 7:2 forward 36:25 83:4 98:11 103:18 114:21 115:9 126:13 134:9 141:25 151:5 152:3 154:8 155:20 forward-thi... 108:17 fossil 70:16 71:18,20 72:24 74:6 104:10 105:4 foster 10:25 fostering 66:6 found 22:17 22:20 67:22 72:14 founded 128:14 founder 92:4 founders 149:16 four 62:5 71:4 121:14 149:24 fourth 17:6 30:16 free 65:14 121:19,23 122:13 153:17 frequency 71:10 friendly 9:16 front 109:23 120:25 121:25 124:5 134:20 147:25 Frontier 47:8 81:14 fruition 154:12
---	---	---	--	---	--	---	--

Committee on the Environment
April 11, 2016

Page 8

frustrating 150:4	gained 147:15	give 18:5 22:12 60:20	95:11	127:24	greatly 11:8 69:25	growing 4:4 6:14 56:17	140:2
frustration 137:19	gains 50:25	75:25 103:4	101:17	131:9	green 1:11	67:13 72:21	145:12
fuel 61:6	Gamesa 58:24	116:25	107:13,15	146:12	2:19 7:14	74:16	146:9
72:24 74:6	gas 3:12	148:23	109:22	148:17	26:7,8 27:2	grown 61:25	happened 40:10 86:15
121:19,23	12:10 26:19	given 13:4	112:12,13	good-paying 129:23	28:5 29:12	grows 79:5	102:14
122:13	61:5 70:14	19:23 39:12	112:23	goods 14:6	29:14,15,25	153:9	153:7
153:17	70:17 72:25	40:21	113:12	government 48:23 52:21	44:2 46:10	growth 69:9	happening 17:15
fuel-product...	74:10	105:22	114:19,20	52:22 53:15	55:25 56:2	76:13 138:6	144:10
71:20	150:25	120:21	115:12	61:3 112:4	64:10 68:12	152:18	156:5
fuels 70:16	151:5,7,9	gives 33:20	117:4	governments 50:3	81:2,3	153:10	happens 15:20 27:20
71:19	151:12,13	134:5 135:9	118:23	Governor 56:16,20	92:21,22	GSA 141:23	happenstan... 102:14
104:11	151:18,20	glad 64:23	121:2,6	141:22	95:4 97:21	guarantee 106:2	happy 14:13
105:4	151:25	127:10	122:21	Governor's 57:8 58:13	98:13 100:2	guaranteed 133:25	34:25 35:16
full 33:2 68:5	152:7,14,21	151:3	130:16	gracious 138:18	102:24	guarantees 134:8	48:9 55:3
90:2,5	gas-produced 153:6	glaring 99:3	132:23	grad 17:16	119:12	guess 35:12	100:20
100:14	gases 70:12	global 104:15	134:9	graduate 77:15	128:2,6	42:20 84:8	hard 22:8,10
114:18	general 115:3	go 34:25 36:4	138:24	graduates 129:11	140:13,24	95:4	52:14 55:15
126:16	150:11	51:14 58:16	145:10,16	grandson 149:5	140:25	guidebook 49:10	129:18
153:22	Generally 27:11	65:10 70:4	146:5	grant 50:20	149:4	guideline 10:15	153:18
full-time 62:5	generate 9:22	92:16 96:4	147:23	89:9 120:4	154:17,18	guidelines 88:5	harmful 13:10
99:7,11,18	72:17	101:18	148:7,9,13	124:16	56:17	gun 141:8	51:11 57:6
99:23	136:21	110:23	148:24	grants 147:6	greenest 6:23	Gym 1:11	57:14 59:21
fully 11:8	generated 9:2	111:2	151:24	147:9,11	Greenfield 45:10	2:18 85:22	141:24
74:14	66:20 122:4	112:12	152:8,13,14	148:19	greenhouse 3:12 12:10	85:23 86:18	harvest 38:6
148:14	generating 85:4 128:8	117:5,11	153:2,14	grateful 100:16	70:12,14	88:15,20,25	hazardous 13:14 39:23
158:5	generation 47:12	118:24	155:19,20	great 7:18	Greenworks 12:2,8	89:16 90:19	87:9
function 61:13	gentlemen 31:19 43:5	126:4	155:21	60:15 72:20	47:25 48:13	91:8,12,17	hazards 3:9
fund 65:15	getting 95:23	133:18	Gold-Markel 115:25	80:18 81:6	grid 73:19	92:7,10	Hazzouri 5:6
135:23	112:19	143:20	127:23	92:11	153:4	105:13	31:12,23,24
136:3	121:6	144:4	128:13	102:25	GridSTAR 79:7	106:23,24	40:4,9
funded 50:18	122:19	145:10	129:11	107:6,9	ground-level 70:25 71:7	111:18	42:14,16
funding 44:14 49:7	125:17	151:9 153:2	129:11	109:18	group 15:17	115:18	43:8
100:9	126:6	goal 3:24	129:11	115:18	21:22 47:8		HD 38:9
134:24	129:21	6:22 131:18	129:11	128:3	64:15 81:14	H	head 60:7
136:5	135:12	135:7	129:11	136:21	115:25	habit 83:23	128:17
furniture 9:9	142:18	goals 12:8	129:11	137:6	119:15,16	half 36:16	130:13
further 10:7	144:11	48:3 110:18	129:11	156:24	135:16	99:6	headquarters 59:4
98:4 117:9	149:17	111:15	129:11	157:6,11	groups 89:23	Hall 1:6	headwinds 153:11
117:19	156:5	goes 23:14	129:11	Greater 28:11 101:5	113:18	handles 135:2	health 7:20
118:5,18	Girard 133:7	27:23 30:17	129:11	greatest 40:6	114:20	Hannah 116:2	8:8 10:19
Furthermore 3:14	Girls 87:25	35:13 86:25	129:11	104:12	grow 95:22	happen 21:4	67:16 68:21
future 13:8		98:24	129:11		102:15	21:8 29:2	70:9 71:16
83:16 94:5		going 15:16	129:11		112:8,20	114:16	71:23 76:14
129:4		17:7,11,12	129:11		113:6	136:18	104:6,12
139:20		20:4,7,9,17	129:11		132:11	139:21	
FY17 10:14		20:19,21	129:11				
17:6 30:16		30:10 39:18	129:11				
		43:17 44:21	129:11				
		56:23 57:5	129:11				
		84:12 89:17	129:11				
		89:18,23	129:11				
G			129:11				

Committee on the Environment
April 11, 2016

Page 9

105:2 106:5	114:7,8	holding 64:11	hundreds	import	121:10	industry	155:18
106:6	124:25	98:14,15	77:21,21	151:15	122:2	12:25 49:9	installations
141:16	127:10	holiday 27:8	105:20	importance	include 7:23	51:9 56:19	53:5 65:8
healthcare	128:8 130:9	34:16	HVAC 44:12	6:19	18:8 50:6	74:2,9 75:2	67:11 74:3
72:2 87:11	132:13	holistic 141:5		important	66:23 75:24	93:6 95:12	75:24 84:12
105:7,25	138:7	141:9	I	10:24 12:16	79:15 89:2	102:20,24	84:21,22
healthier	141:15	home 24:13	IBEW 77:13	19:23 42:11	included 7:25	132:5,11	installed
110:17	helped 51:13	39:7 141:9	77:19 78:5	64:12 65:19	includes 89:5	153:2,11,13	50:23 70:5
healthy 66:6	69:8	homeless	78:12 79:18	75:19 80:2	142:4	inequitable	76:4 84:14
hear 5:20	helpful 60:17	130:15	80:6 81:10	89:24	including 4:5	44:14	86:17 87:13
25:15 36:7	92:16	homeowners	86:25 90:17	101:22	12:8 14:2	inequities	128:21
55:7 77:7	120:10	69:21,23	90:20,24	107:16	48:5 50:8	99:4	installer
83:18	helping 62:11	76:2 93:5	91:23 95:14	108:15	65:21 67:10	information	74:20 91:6
111:24	62:18 96:2	homes 95:11	100:17	109:3,25	74:10 99:6	13:25 34:18	135:18
118:25	112:22	hometown	idea 22:13	110:8,18	104:21	61:11	installers
149:6	113:18	147:2	81:10 83:2	111:24	132:7	information...	62:13,20
heard 29:18	154:6	honor 77:11	106:16	112:17,24	135:24	49:25	130:12
56:22 99:8	helps 80:12	hope 66:7	142:7	113:10	income 111:9	informative	installing
111:19	91:18	131:2	144:16	135:4	inconsistent	39:11	54:15 61:16
123:16	Hi 5:16	hopeful	154:12	138:17	51:10	informed	64:21 65:5
137:19,21	high 19:5	108:13	ideas 18:5	154:7	Incorporated	60:3	66:11 72:19
150:24	45:15 77:16	hopefully	149:22	importantly	69:6	infrastruct...	75:15 78:25
hearing 14:25	87:25 92:4	120:3,10	identified	77:24 80:16	increase 48:4	54:24	130:19
17:22 25:4	92:15	hoping 139:3	131:5	120:18	51:18,19	ingests 3:17	institutions
28:15 62:10	102:11	horizons	identify 17:19	124:3	57:17 67:23	initial 142:16	52:5 114:8
64:12 85:9	111:8	52:17	109:8	125:16	73:19 78:19	initiative	125:12
98:14 100:3	113:25	hospitals	113:18	improbable	increased	45:18 56:8	132:19,20
112:2	120:16,19	87:12	II 56:18	13:6	75:6 79:12	61:20 74:19	instructed
114:13	121:12	host 123:6	imagine	improve	152:11	78:13 81:18	157:14
117:6,11	123:9	hosting 128:5	137:2	13:21 14:5	increases	97:23 98:19	instruction
118:24	higher 54:22	hot 32:12	immediate	68:23	71:9	98:23 100:7	88:8
128:5 129:5	122:11	105:14	99:25	145:25	increasing	100:15	instructional
137:18	152:2	hour 73:12	immediately	improved	34:4 54:23	initiatives	84:19
141:7 157:8	highest 82:8	122:6	17:15	51:4	66:16 78:24	28:8 29:19	insulate
hearings 1:17	highlight	hours 26:20	impact 14:5	improvement	104:20	30:3 37:2	33:21
47:4 98:15	132:15	84:19,20	70:4 80:4	54:25	152:14	74:12	integrated
heat 32:15	highly 13:6	86:10,10,11	100:10,13	improveme...	increasingly	137:25	7:22
heavier 34:7	72:23 127:2	86:12,14,19	101:10	54:15	7:21 78:16	innovative	intend 17:2
heavily 87:8	Hill 45:9	88:8 90:21	107:15	improving	79:14	100:9	intended 3:7
heavy 9:9	Hillary 97:3	90:22,25	132:11	7:18 12:9	incredible	insert 39:23	interact 51:4
58:22	97:17	91:2,6	141:6	12:17 54:16	130:16	inspirational	interest 125:4
hedge 134:7	hire 129:7	House 130:2	149:22	108:4	incredibly	157:2	137:24
Helen 1:11	130:20	130:3,7	impacted	in-house	65:25 67:19	install 78:6	148:11
2:18	132:12	households	71:12	131:20	individual	131:15	155:5,9
help 15:10	138:7	70:4	impacts 6:20	in-your-face	24:13 37:13	installation	interested
35:17,17	hiring 17:16	housing	10:18	140:19	individuals	53:7 54:6	42:20 68:4
37:5 50:15	hit 25:20	131:3	imperative	inadequately	94:25	74:24 80:11	107:18
53:5 55:11	hold 1:17	hub 61:15	105:22	105:15	103:10	84:8,11	111:21
57:14,25	9:23 47:4	human 10:18	implement	incentive	110:21	85:15 86:13	112:2
59:15 73:9	116:18	humanity	7:12 10:7	51:11	industrial-t...	87:22	126:21
79:8 92:18	120:2	6:15	18:6 35:18	incentives	39:2	128:15	interesting
96:5 108:6	147:18	hundred	69:19	51:23 52:14	industries	132:2,3	33:15 34:13
113:17	157:16	125:5	implementa...	53:9 121:8	72:22 103:4	134:10	44:7 81:9
			11:25				

Committee on the Environment
April 11, 2016

Page 10

147:4	115:23	73:10,11,19	35:21	111:25	132:17	lender 154:23	86:12
Intergover...	139:13	73:19 75:5	Kensington	114:3	larger 35:11	lenses 98:7	101:19
72:4	inviting 97:22	75:7 76:13	130:24	115:16	largest 32:4	let's 20:7	111:20
interim 36:18	involve 53:23	80:6 82:6	key 124:3	129:7	36:12 70:11	35:25 36:2	120:3
intern 17:17	involved 93:4	82:12,15	139:6,21	140:12	146:21	38:7,12	133:18,22
internal	95:24	83:16 95:20	kilowatt	145:17	laser-focused	43:21 46:14	138:8
35:15	125:13	129:4 132:4	122:6	knowing 60:8	97:25	55:7,18	141:19
International	142:19	137:22	kilowatts	122:20	Lastly 52:20	114:15	144:4
63:21 77:8	involvement	139:9,19,22	70:5	knowledge	60:19	139:25	148:25
interns 130:4	98:18	144:11,20	kind 23:22	24:4	latest 30:20	140:2	152:23
introducing	Iowa 146:21	154:5	28:6 30:3	known 3:2	62:22	142:10	live 155:24
11:5	isolation	John 129:25	32:9 56:19	12:6,24	lauds 99:25	145:14,16	lived 119:23
inventory	98:12	Johnson	61:7,15,25	13:13	lead 13:14	145:16	lives 80:7,12
8:25 9:5,6	issue 44:12	140:11	81:10	104:18	101:18	letting 111:4	96:13
inverters	59:16 60:8	141:6	107:19	Kurtz 115:24	leader 66:4	level 56:24	129:20
49:17	81:8 98:9	Johnson's	108:11	119:7,11,14	leadership	81:25	140:10
invest 89:17	105:8 128:9	34:15 129:5	109:12	145:6 146:4	10:25 11:7	125:20,24	156:3
120:14	146:13	137:18	141:9	150:19	21:5,16	127:18	living 132:10
invested 86:3	issued 8:4	join 4:4	kinds 82:23	153:17	76:20 98:21	levels 70:22	Liz 92:25
86:19	issues 9:13	104:19	84:5 156:12	KW 84:13,14	132:7	leverage 3:23	94:2 95:2
121:13	57:9 62:23	joined 47:19	Knapp 5:3,24	133:11	leading 13:20	82:3	96:11
investigate	71:23 78:10	joining 2:3,16	5:25 11:16		77:19 79:7	leveraging	LLC 123:19
47:8	98:2 131:7	95:13	11:17,18	L	105:9	141:12	loads 41:7,9
investment	items 9:11	jointly 50:18	14:24 17:14	L 158:14	146:10	license 87:23	lobbyists 59:2
52:10,19		57:5	18:10 23:12	L&I 62:13,20	leaf 27:19	life 77:17	local 50:3
53:3 121:7	J	Jones' 141:7	24:9,22	62:24 63:5	learn 69:23	96:17	51:7,24
121:16	January	judged 99:20	25:5 26:14	76:10	77:24 80:10	106:13	59:17 62:12
122:3	30:17	99:21	27:11 28:12	labor 77:25	131:16	133:14	62:19 65:12
135:10	jawn 138:11	jumped	29:4 31:9	88:5 89:10	learned 44:22	lift 41:25	72:3 73:9
142:18	jawnament	130:13	46:16 47:17	107:25	102:17	42:10 58:22	74:20 77:13
145:5	138:12	jumping-off	47:18 55:10	Laboratory	120:3,9	light 37:14	77:19 78:5
investments	Jefferson	66:8	56:4 57:2	73:14	learning	90:8	79:18 81:24
52:4 121:4	130:23	June 30:17	58:15,23	lacking 99:10	83:15	limited 13:4	82:12 90:24
125:9	Jersey 38:24	30:21	60:10,14,18	Lady 85:22	138:21	52:13	108:25
investor	56:21 143:8	jurisdiction	121:21	lagged 51:9	lease 47:6	142:20,21	124:18,20
123:2	144:23	87:4	know 20:18	lagging 75:17	133:13	150:8	124:23,24
135:16	Jim 115:24	jurisdictions	22:11 23:19	lags 75:3	leases 133:8	Linardopou...	125:14,15
investors	119:14	142:14	23:22 24:4	laid 139:17	136:25	97:3,15,18	128:14
120:14,21	132:21	143:5	24:24 25:10	Lancaster	leaves 153:16	114:6	138:6
121:3,3,5	133:16	justice 70:9	26:17,20	32:5 33:2	ledger 44:18	line 101:24	139:11
122:16	135:4	102:2,4	28:12,13,15	land 13:15	leeway 19:19	156:15	locally 101:7
123:14,18	Jim's 135:25	142:6	29:3 32:10	47:10 131:2	legislation	lined 32:13	101:14
124:7,14,18	job 74:15,16	justify 52:15	32:13 33:17	landfill 9:21	3:18,25 4:8	33:24	139:5
124:23,24	81:15,20,24		36:21 37:24	landfills 8:19	49:14	list 58:10	locate 59:3
125:2,16	82:19 83:20	K	39:7 41:11	8:21	legislative	listen 45:22	located 50:10
126:6,19,22	93:15,16	Kai 130:4,7	44:13,13	language	58:19	listened 129:2	130:23
127:6 135:6	102:8	keep 33:21,22	45:12,17	7:25	150:14	Listening	132:8 133:6
145:7	103:11	60:2 109:4	55:15 56:16	languishing	legislators	137:17	134:22
148:13	129:23	125:14	56:20 78:8	69:12	143:24	literally	location
invitation	141:13,15	keeping	79:17 81:13	large 12:15	legislature	80:12	42:22 74:3
104:4	152:18	104:15	82:7 86:2	22:14 52:4	57:16 58:14	132:18	locations
invite 31:11	jobs 58:3	Kenney	91:15 92:5	58:25 112:8	143:21	little 19:13	39:25 79:20
63:15 96:24	59:17 65:12	138:18	92:17 111:5	112:12	144:15	33:18 62:17	87:9
	66:5 72:3	Kenney's		125:7			

Committee on the Environment
April 11, 2016

Page 11

Locke 44:11	losing 26:21	44:3 56:3	21:13 61:7	12:23 33:4	118:24	microphone	157:4
logistically	lost 72:2 75:7	81:4 85:24	mandated	38:6 39:3	meetings	31:21	momentum
35:12	147:14	86:4 92:23	99:19	math 145:3	15:20	microplastics	128:8
logo 155:3	lot 28:16 32:7	106:25	mandating	Matt 63:17	member	13:13	Monday 1:7
long 57:25	34:7 42:7	117:16	66:18	68:16,19	115:12	Mid-Atlantic	money 26:21
79:18	56:21 58:2	141:2	mandatory	93:24	members 2:6	5:8 31:14	26:22 65:14
109:17	75:10,15	153:21	36:3	matter 19:25	6:7 11:20	middle 78:2	66:4 105:25
110:6	76:12 78:8	magnificent	Mantua 88:2	20:4 132:17	18:12 22:2	miles 32:4	120:25
123:12	84:24 87:10	139:16	manual 10:16	140:7 158:7	30:5 31:2	Miller 116:3	121:6,24
125:24	101:19	main 38:4	17:7,11,12	mature	43:12,14	million 9:4	122:10
141:24	105:17	70:17 71:2	21:20	145:12	60:2,3,6	28:9 50:17	123:4,18
148:9	106:14	85:5	manufacture	maximize	64:10,16	89:11	124:5
154:19	109:18	mainstream	32:2 34:6	38:12 39:17	68:13,22	119:19,20	125:14
long-lasting	110:24	50:25 67:14	manufactur...	39:18 120:7	78:5 84:16	125:5	134:17,21
100:10,12	113:17	maintain	59:6	maximizing	85:6 90:17	126:10,11	144:19
long-term	122:13	78:6 122:21	map 17:18	38:8	104:2	126:11	145:19
54:4 152:16	124:19	135:15	Marcellus	Mayor 8:4	116:23	127:8 148:8	147:25
152:21	127:17	maintaining	151:18	35:21	129:9	millions 65:9	148:14
longer 33:11	132:24	133:21	margin 19:18	138:17	membership	128:24	monitors
52:17,18	143:8	maintains	marine 3:16	Mayor's 62:3	101:7	135:23	134:25
121:22	144:23	133:12	market 20:13	McMichael	memory	minimal	month 41:13
139:22	145:18	maintenance	20:19 25:20	88:2	154:20	22:12,14	61:9 64:18
look 15:24	149:3	121:15	36:22 48:22	mean 14:18	men 77:22	minimally 7:3	monthly
20:22 22:17	152:12	122:25	50:22 51:10	14:21 20:4	80:8,19	minimum 8:9	155:9
25:7 29:23	louder 62:15	124:6	51:20 56:22	22:14 24:22	140:10	88:7,11	months 41:2
33:15 44:19	Louisiana	133:17,22	57:15 75:8	90:16 94:17	mentioned	minutes	41:20 44:21
45:23 46:3	151:16	135:2,16	143:9,12	110:24	17:21 135:5	116:25	morning 2:5
46:4 83:25	love 109:14	major 17:2	144:7,10,14	133:21	141:5	mission	5:24 99:9
107:14	139:15	25:20 87:11	144:15	137:2 143:7	152:19	101:11	131:9,13
108:11	low 51:25	114:13	156:7	149:14	Meridian	113:8	138:16
111:12	52:12 62:17	151:15	marketable	meaning	154:23	mission-dri...	Morton 88:2
113:5,12	122:24	making 6:22	25:18 26:24	99:16 144:7	merits 103:15	136:4	motion
115:2,9	123:10	19:14 21:17	marketing	155:7	message 3:20	mitigate 7:15	118:15
121:24	127:18	52:3,9 53:9	74:25	means 83:11	100:5	37:6	Mount
122:2	143:17	57:19 62:23	marketplace	144:3,5	met 20:9	mitigating	155:24
126:18	150:24,25	85:5 96:6	21:10,17	158:22	35:19,20	37:3	move 33:23
127:5	151:14	101:9 110:5	23:3 25:19	measure 23:9	metal 8:19	mix 72:13	43:13,18,19
140:20	153:12	110:17	52:9	117:4	metals 9:24	mixed 100:5	43:21 56:19
150:6 154:7	low-cost	111:13,16	markets	measures	methods 51:4	model 115:5	57:25 59:8
looking 15:16	134:6	111:17	12:25 13:5	54:20	Miami 4:6	140:2	59:9 83:4,9
16:2 20:7	lower 48:20	115:6	24:23 51:8	mechanism	mic 5:20 25:4	149:23	96:18 98:11
36:25 38:5	52:8 122:7	man 26:20	51:25	100:9	62:15	modeled	103:17
41:4 45:19	123:23	manage	151:25	mechanisms	116:16	48:13	104:10
86:3 89:17	lows 52:3	131:18	Maryland	75:22 136:9	Micah 115:25	models 65:20	108:20
91:14 92:11	lucky 91:25	managed	146:23	medical	128:13	modern	117:4,7,16
92:13 98:5	lung 71:7	21:12	Masterman	105:9	156:21	154:4	117:19
143:2		management	105:11	meet 57:23	Micah's	modified 99:9	130:18
145:19		131:19	material	meeting	146:10	modules	141:25
149:21	M	Manager 5:9	12:19 26:19	14:21,25	Michael	122:20,20	moved
looks 113:9	M/WBE	31:15 46:21	37:8,10,12	15:3,5,14	63:19 77:7	moment 24:7	117:17
Los 35:9,11	108:25	47:21 97:4	37:18 38:4	15:16 23:15	77:14 84:4	128:11	118:2,5,16
37:23 87:12	machines 9:8	101:4	42:23	43:14 117:5	MICHELE	129:24	118:18
lose 116:20	Madam 26:9	managing	materials	117:12	158:14	139:24	movement
	28:24 29:12						

Committee on the Environment
April 11, 2016

Page 12

102:15 moves 3:18 moving 46:12 126:13 145:9 MRF 12:24 25:14,15 multi-tasking 94:18 multiple 128:24 136:12 municibid.c... 9:2 municipal 13:21 61:2 61:15 142:4 municipalit... 49:5 146:19 MURPHY 158:14	153:6 Navy 79:4,5,9 near 52:2 139:20 nearby 79:2 nearing 99:13 nearly 64:15 65:4 67:9 68:22 71:6 99:11 necessarily 114:14 necessary 74:25 133:22 necessities 65:18 need 34:24 44:18 46:19 80:20 84:2 94:24 104:10 108:19,20 109:11 110:2 113:13,14 129:22 131:8,12 135:15 139:9 141:10,13 144:21 145:8,24 148:5,18 156:16 needed 51:18 54:19 136:23,23 needs 15:9 45:25 54:25 65:5 73:18 121:25 129:3 139:21 negative 10:18 neighbored 58:5 neighborho... 34:17 92:15 113:22,24 neighborho... 71:12	neighbors 34:16 Neill 63:19 77:7,10,14 84:4,10 85:12,19 86:2,7,22 88:4,13,18 88:22 89:2 89:6,8 90:11,16,24 91:10,16,25 92:9 net 122:2 Network 17:24 69:19 97:5 101:5 networks 113:19 never 82:20 99:22 103:13 110:21 140:17 145:23 147:22 new 7:12 17:9 38:24 49:12 56:21 64:18 66:25 83:16 103:3 107:11 108:22 113:5,25 123:18 143:8 144:23 146:22 newer 137:5 news 50:23 nitrous 105:5 no-brainer 140:7 non-biodeg... 13:15 non-payment 123:10 non-profit 101:6 123:11 non-profits 120:7 136:2 136:4	non-traditi... 102:9 NORESCO 142:3 North 32:19 59:4 74:23 130:6,24 133:6 144:12,20 148:22 149:6 150:13 153:24 Northeast 24:11 28:11 32:20 39:15 40:7 45:15 note 43:4 65:19 93:23 93:25 105:10 noted 86:4 106:9 132:21 136:9 notes 40:5 158:6 noting 125:18 NREL 73:14 nudge 16:19 number 4:4 15:3 19:9 44:21,22 45:13 66:13 95:6,19 99:9 112:15 132:6,24 137:11 143:22 numbers 26:2 92:5 nurse 99:12 nurses 65:16 99:8	obstacles 108:10,18 obtained 120:4 obviously 103:7 107:13 123:7 126:8 occasionally 27:20 occurring 79:9 odd 156:2 off-taker 123:6 offer 2:10 76:12 156:22 offers 7:14 138:4 office 2:11 4:10 5:2,3 6:2,21 7:10 8:13 9:10 10:6,20 11:19,24 13:22 14:7 14:19 19:15 20:11 23:9 30:9 46:16 47:18,21,23 47:24 48:7 49:8 53:19 53:20 57:8 58:13 60:24 60:24 61:23 61:24 62:2 62:3 63:3 96:12 114:25 124:10 156:22 oil 8:20 9:24 70:17 72:24 151:8,9 Okay 19:16 19:21 21:24 23:23 28:5 30:19 31:6 36:6 40:18 43:3 58:20 63:4,7,11 77:5 85:13	85:21 88:25 95:3 96:22 100:22 103:21 115:20 older 137:12 on-the-job 86:9 88:9 once 3:25 17:9 18:4 43:19 103:3 103:4 116:6 121:18 142:24 150:2 154:18 one-time 147:22 ones 90:12 ongoing 61:21 online 64:16 op-ed 144:3 open 115:17 openings 74:15 operate 53:25 operates 141:3 operation 40:7 61:16 operational 48:7 61:2 operations 121:12,15 122:25 124:6 opportunities 17:20 52:20 61:18 66:6 74:11 81:16 81:20 82:19 82:23 93:3 93:16,17,18 94:5 102:9 102:21 109:19 111:7 113:4 115:8 120:8 136:16 140:20,21 141:16 opportunity	11:9,21 14:12 20:6 44:4 45:11 55:2 56:10 56:18 57:14 58:8 68:25 72:20 77:12 77:23 80:18 80:20,21 81:22,24 82:12 83:15 87:3 95:13 100:8 103:15,16 106:18 107:10,12 111:3,6 112:17 113:6 114:2 115:4 119:13 132:25 142:9 152:16,18 154:4 opposed 19:9 118:12 opposite 153:7 oppressively 105:14 optimistic 59:18 108:14 option 53:15 53:21 options 47:9 48:23 54:13 order 8:3 10:11 32:14 37:11 38:3 51:19 98:10 108:21 109:11 ordinance 1:14 3:3 4:16 Oregon 4:6 organically 138:25 organization 68:22 83:19 93:21 94:25	95:18 101:7 123:3 organizations 83:24 89:22 119:17 124:11 125:8,11 135:22,25 148:7 organized 69:22 Organizer 63:17 64:7 ornament 138:12 out-of-pocket 136:17 outfits 112:7 outlined 64:20 outlining 49:11 outreach 14:3 63:18 68:20 outset 113:10 outside 124:25 149:19 150:2,6 outsourced 73:11 over-exploit... 7:16 overall 98:25 105:7 106:6 106:15 oversized 99:13 overview 48:21 owned 21:11 54:7 101:7 owner 133:2 133:5 134:5 134:12,20 134:22 135:21 owners 53:13 ownership 53:7,11 owns 133:12 oxide 105:5 ozone 70:25
---	--	---	---	---	---	--	--

Committee on the Environment
April 11, 2016

Page 13

71:7	Paris 104:18	130:3	139:18	20:10,14,14	146:18	98:11 101:6	place 7:6 23:5
P	parity 153:4	partnerships	140:16	20:15,16,18	149:7	101:12	28:8,10
p.m 1:7	park 131:9	91:19 114:3	PennEnviro...	20:21 33:19	150:14,22	103:2,10	57:12 137:8
157:19	Parkway	114:17	72:10	34:10 53:2	152:20	104:7,18	138:24
P3 56:9	142:5	pass 49:14	pennenviro...	54:8 65:4	perspectives	107:23	placed 157:15
P3's 143:2	part 10:15	59:8,9	68:6	67:22 69:10	78:11 90:9	108:6	places 114:2
PA 51:21	16:22 17:11	passed 4:2	Pennsylvania	70:14 72:17	PET 38:8	119:23,24	placing 6:15
packaging	17:23 21:20	21:5 58:24	1:6 45:3	73:17,23	petty 23:20	129:13	133:9
33:12 39:8	27:25 32:20	passing 14:17	48:22 57:23	75:6 120:20	PFT 81:10	130:6,24	plan 10:11,23
39:8	35:2 57:3	passionate	58:4 59:5	121:7	100:14	132:9 138:2	12:3 15:12
packed 33:8	57:10 58:8	102:16	67:11 69:4	122:12,21	114:7	138:15	15:24 16:24
page 16:25	60:24 61:25	103:6	69:7 70:11	125:19,21	PFT's 98:18	141:17	17:3 30:13
paid 134:12	84:22 86:14	pat 41:18	75:3,7,11	125:24	PHA 92:3	149:18,19	48:3,12
134:13	87:14 88:9	path 102:12	75:16 88:6	126:3,5,6,7	Philadelphia	149:20,24	66:23
pain 152:15	107:8,17	132:4	89:10 90:22	126:8,10,16	1:2,6,14,18	Philadelphi...	planet 110:17
panel 4:25	125:6 131:3	paths 102:21	143:16	133:25	2:4 3:5,20	64:22 71:11	planet-cons...
5:5,6 11:14	participate	pathway	144:2,6,11	134:3	4:2,3,17	71:23 73:24	10:10
31:11 43:21	91:23 122:9	110:20	144:18,24	140:23	5:18,23	74:14 76:20	planning
46:15 55:8	125:8	patterns 6:18	146:24	145:10	6:10,18,22	Philadelphi...	58:16
63:16 72:5	participating	pause 43:15	151:19	147:11	10:9 12:2,7	128:14	plans 28:20
81:15 82:21	122:17	117:2	Pennsylvan...	151:10	22:15 23:8	Philadelphi...	Plant 50:12
84:6,7,7,10	particles	pay 52:7 54:5	51:8 66:15	153:9	28:9 34:12	138:13	planting 70:6
84:25 85:3	13:13	73:11 123:4	75:9,17	percentage	34:14 35:13	Philadelphi...	plastic 8:18
97:23 98:19	particular	123:22	Pennsylvan...	91:22	35:25 36:15	73:10 129:8	32:14 33:24
100:7,24	26:24 28:13	124:6,8	69:11	perception	45:6,14	132:12	plastics 13:15
115:13,24	108:11	127:13,14	Pennsylvan...	147:4,5	46:3,12,18	137:4,22	14:3 25:12
116:7,25	113:25	127:16	67:19,23	perennial	46:22 47:6	139:20	plates 23:16
119:4	particularly	132:10	people 28:3,9	105:22	47:10,25	Philip 45:8	23:18,18,22
panelists	13:10 21:3	137:3	70:3 82:15	Perez 77:25	48:5 49:2	Philly 64:17	39:4
55:10 93:22	97:21	149:22,25	83:12 89:21	performance	50:10,20	129:10	play 75:18
panels 44:5	107:18	payback 52:3	95:6 103:4	135:2	52:6 60:4	131:24	121:22
44:24 44:5	108:21	paying 65:10	104:23	permeates	64:11,19	philosophy	plays 15:8
45:6,17	109:2	105:18	107:24	98:9	65:3 66:3	83:8	please 5:4,14
49:17 50:14	112:17	122:8	110:11,24	permit 118:6	66:10,12	photovoltaic	28:23 31:13
53:8 54:6	particulate	123:23	111:24	118:19	67:4 69:20	50:9	31:19,21
64:22 65:6	8:11	payment	112:7,20,21	permitting	70:21,23	physical 82:4	43:24 46:14
66:24 67:2	partisan	155:10	137:19	49:11,16	71:4 72:11	Physicians	62:8 81:2
67:5 73:5	59:16	pays 79:17	146:25	76:10	72:12,14	97:7 104:7	84:4 94:20
76:4 78:23	partly 90:5	135:21	149:15	person 86:17	73:4,5,7,8	physics 37:11	117:14
79:13,21	partner 89:22	PECO 49:19	152:10	152:5	73:15,23	pick 33:2,5	119:4,25
81:11	90:2,5	134:3,4	154:6 155:3	personal	74:23 75:18	40:15	pleased 6:10
104:21	113:22	pegged 134:3	155:6,8,19	105:10	75:20 76:7	picked 24:20	128:11
106:3,12,17	123:9 136:5	pellets 33:10	155:22	119:22	76:12,16,17	picking 41:3	plus 34:6
133:10,15	partnered	PennEnviro...	156:5	personally	77:16,18,23	pictures 41:7	pocket
142:7,15,19	69:18	1:18 47:7	people's	59:18 94:10	78:7 79:4	piece 37:18	134:18
paper 8:14,15	partnering	63:17 64:8	96:13	94:22	79:20,24	pilot 69:19	point 18:3
14:2 20:8,9	74:20	64:13 65:25	perceived	101:23	80:8,19	112:15	24:19 35:9
23:17 32:11	partners 81:9	81:7 94:11	123:10	136:11	81:12,21	pipeline	42:16 51:17
32:13 33:23	92:17	98:21	percent 8:10	154:9	82:7 83:12	114:10	51:22 58:18
34:5 37:19	partnership	100:16	8:15,17	perspective	83:13 87:7	pipelines	66:8 111:11
37:20 38:10	7:9 8:7 56:9	106:9 126:9	18:25 19:2	78:15 79:11	87:21 89:9	151:17	114:24
pardon 144:4	107:19	126:24	19:2,5,18	82:14 83:7	91:22 92:3	Pittsburgh	115:4
parents 83:14	112:24	136:11	19:18 20:10	105:3	97:2,12,18	57:5 58:17	146:10,12

Committee on the Environment
April 11, 2016

Page 14

pointed 98:16	potential 18:5	predictable	prices 51:25	145:2 147:5	14:22	54:9 65:23	provide 11:22
points 32:17	37:7 39:17	121:11	52:2,8,13	147:5	148:15	86:20	13:25 26:2
146:6	39:19 54:13	122:18	72:24	problematic	product 13:2	124:13	41:6 43:24
poles 9:9	74:4 79:22	predictions	147:13	41:8	24:8 33:18	125:14	45:25 55:3
Police 10:2	126:20	152:4,24	148:19	problems	35:3 96:3	126:2,20,22	72:3 73:18
policies 7:12	138:5	preferable	150:23,25	112:3	production	131:3	80:17 81:22
10:8 49:20	potentially	10:22	151:5,8,20	145:20	3:11 74:4	147:12	82:6 88:16
69:13 75:4	40:2 131:20	preference	152:9,11,21	procedures	120:18	project's	88:18 103:3
75:17 76:19	148:7	1:15 2:23	152:25	7:13 10:8	122:18,22	50:17	110:20
111:13	poverty 82:8	2:24 4:19	pricing 20:22	proceed 5:4	products	projects 8:7	111:7
policy 47:7	140:23	6:12	106:11	5:14 6:4	10:17 24:24	34:14 49:12	provided
51:7 52:22	154:6	Preferences	primary	31:20 47:16	25:8 26:13	50:7 52:16	32:23 56:18
57:8 66:14	power 3:23	1:15 4:18	78:12	64:3 97:11	27:10 32:7	52:24 53:10	147:11
75:21,25	13:21 48:20	premature	principal	116:16,24	33:6,12,16	53:13,21	providers
97:4 101:4	50:15 53:17	71:25	3:15	119:5	35:4 52:15	61:14	112:18,19
137:25	56:5 57:22	prepare	principally	proceedings	78:23	119:19,21	provides
political	65:21 67:14	74:24	138:2	158:4	professiona...	120:15	45:11 56:11
59:12	69:24	prepared	143:17	process 2:14	108:7	126:15	72:19 77:21
poll 67:22	123:16	74:15	principles	26:10 49:12	profit 101:8	131:18	81:24 82:14
polluted	132:22	preparing	101:13	111:22	program	141:20	82:22 90:21
70:19	133:3 135:5	28:14	prior 36:17	113:12	27:19,25	142:2,22	96:2 100:8
pollution	135:13	presence	82:21	148:10	35:15 38:24	promise	providing
13:11 50:11	136:15	43:14	140:15	processes	41:10 50:2	30:10	45:20 46:5
65:12 70:18	143:2,6	PRESENT	priorities	17:19 48:19	51:21 67:5	promote	66:5 80:6
70:23 71:3	PowerCorps	1:9	59:21 91:19	49:20	70:2 74:22	48:19 69:14	82:11 90:12
71:13 105:5	102:25	presented	priority 57:9	procurement	77:20 80:7	110:25	93:3,15,20
polystyrene	103:10	147:20	90:4	1:15 2:12	85:17 86:5	promoted	95:13 96:7
1:16 4:20	129:9	presents	prism 96:14	2:22,24	86:8,9,22	69:3	115:7
6:13,24 7:3	Powering	107:10	private 50:5	4:11,17 5:2	87:8,16,20	promoting	public 7:24
11:6 12:5	49:23	President	52:23 53:11	5:17,22	90:25 91:4	75:19	8:2,6 28:7
22:19 32:21	PPA 53:18,22	81:16 97:6	53:23	6:25 7:4,14	91:5,23,24	promotion	39:20 64:22
33:19 37:14	123:17	104:7	privilege	7:17 8:23	93:9 94:3	28:16	65:7 67:5
38:19	134:19	115:24	77:11,19	9:6,19,23	95:8 114:14	properly 13:9	70:8 71:23
portal 37:6	135:20	116:2	proactive	10:4,7,12	115:15	118:2	76:14 92:12
portfolio 7:11	136:7,25	119:14	113:11	10:14,16	129:14	properties	98:6,8,25
15:25 51:16	139:14	138:19	probably	11:7 13:23	138:23	69:25	104:12,21
57:11,18	146:21	press 136:22	17:5 18:25	14:20 15:2	programmi...	property 9:14	105:2
75:12	PPAs 135:24	pressure	20:5 25:22	15:7 16:10	111:13	44:6 54:2	113:22
143:18	136:12	36:22	28:2 41:11	17:7,13,18	programs	96:6	117:11,12
portion	143:8	pretty 41:17	45:15 56:6	17:22 18:2	27:16 28:7	proposal 78:4	117:21
131:10	144:23	41:21	58:18 84:16	18:16 21:20	37:22 38:12	78:9 79:8	132:6
Portland 4:5	145:2	prevent 53:6	86:16 90:3	23:8 29:17	38:19 51:12	79:11,21	137:23,25
positive 71:16	146:21	previously	92:6 112:12	29:20 61:4	61:14 69:15	80:3	156:9,16
101:9	practical	51:13	112:13	115:3,6	79:7 89:21	proposals	158:15
possibility	110:19	130:15	115:17	128:19	92:15	80:4,13	public-priv...
91:14	practices	price 1:15	130:18	produce	102:25	proposition	56:9
possible	10:17 11:3	2:23,24	133:20	16:24 73:16	103:8,12	132:18	pull 5:19 25:3
45:17 58:12	17:25	4:18 18:17	139:2	110:14	113:21	prospects	31:21
59:19 73:6	pre-consum...	54:10 134:4	141:11	111:12	114:9,12,17	129:4	116:15
76:18 87:19	39:2,8	151:12	150:15	135:8	138:24	protect 72:23	pulling 17:24
110:22	pre-determi...	152:2,6,13	problem	produced	progress	protecting	128:10
135:9	123:25	153:3,5,8	41:12 131:7	148:16	41:16	3:21	purchase
post 8:24	predict 152:6	153:18	143:16,19	producing	project 49:4,8	proud 77:15	10:15 12:15

Committee on the Environment
April 11, 2016

Page 15

23:15 52:7	140:17	79:16 83:21	110:14,19	117:11	28:4,10	regards 20:25	remains
53:16,17	145:22	83:21 84:2	reality 99:5	118:23	34:11,11	region 13:7	100:14
54:4 56:6	146:2	157:3	111:17	recognize	35:8,24	68:24 70:23	remarkable
65:21 69:10	147:25	quorum	realize 110:5	98:23	36:3,11,12	76:7,12	41:18
69:21 75:13	148:8	43:20	really 15:7	117:13	36:21 38:12	101:12	remarks
76:5 123:16	puts 2:22	116:20,22	17:19 20:4	129:25	38:24 40:21	150:2	43:25
132:22	52:22		20:13 22:10	recognized	red 32:10	Regional 52:2	remember
133:3 135:6	putting 42:17	R	22:12 23:19	6:19 51:2	redirect 9:21	registered	41:23
143:2,6	82:21 121:5	radar 140:18	25:13 36:24	recognizing	redirecting	58:12	reminds
purchased	123:18	raised 30:25	38:5 39:9	49:23 78:18	9:18	regular 11:3	141:18
3:8 12:6	129:19	raising 77:17	55:14 57:12	recommend	reduce 10:18	35:13	154:21
14:6 16:14	133:19	Randolph	92:17	24:20,20	11:5 12:4	regularly	remiss 2:10
23:22		45:8	101:20	114:4	44:19 49:6	14:21,25	remove 49:5
134:19	Q	range 10:3	102:4,16,23	recommend...	54:18,21	15:3	Rendell
purchasers	quadplex	99:14	103:2 107:5	117:18	79:22 81:22	regulatory	141:22
12:18	142:3	ranks 3:13	107:16	118:4,17	96:5 105:3	49:5	Rendell's
purchases 7:3	Quaker	rare 113:3	109:22	recommend...	106:4	reimbursed	56:16
8:14 23:14	149:11	rate 123:24	110:6	16:6,9,17	156:12	120:20	rendered
purchasing	qualifies	123:25	112:23	21:21,23	reduced	reimburse...	19:25
2:25 3:4	108:5	134:4	114:13	25:7 40:19	49:15 54:10	23:21	renew 24:23
10:11,22	qualify 53:2	140:23	115:2,5,13	66:14	70:2 125:21	reinforces	renewable
11:2 13:21	quality 3:6	155:4,9	130:21	recommend...	reduces 71:25	112:10	58:3 61:18
15:7 16:3	12:10,17	ratepayer-s...	135:5 140:7	150:10	reducing	reinvent	66:17 67:24
22:24,25	13:22 68:23	144:7	140:22	ReCommu...	44:25 45:7	95:17	69:4,14
61:4	quantify	rates 82:8	143:24	5:9 31:15	50:4 65:11	reiterate	71:21,25
pure-play	106:2	127:7	145:13	36:10,11	71:3 82:10	133:15	72:7 73:13
36:12	quantities	re-pronounce	150:3,4	record 5:14	156:14	related 48:20	75:9,19,22
purely 78:14	12:15	46:20	154:12	31:20 55:19	reduction	153:23	76:6 104:11
purposes	quarter 17:6	reaching	realm 133:20	81:6 116:15	8:10	relationship	143:15
133:9	30:16 75:8	93:11 96:16	reap 71:15	119:5	reductions	114:5	renewables
pursue 65:23	quarterly	react 37:15	reason 95:5	157:13	12:10	relationships	155:16
111:4	14:21	read 4:14	103:19	recovery	reference	60:5	renewed
pursuing	quarts 8:20	46:24	105:9 143:9	12:23 39:19	29:19 38:17	relative 52:23	137:23
49:21	question	130:13	147:17	50:18	56:5,7,15	released 1:18	renovations
127:19	19:24 22:7	148:5	reasonable	recyclable	56:21 82:18	64:18	66:23
purview	32:18 85:25	153:15	30:14	12:20 13:2	93:2,11,12	relevant 99:2	repeat 83:13
24:19	88:16 107:8	readily 14:10	reasonably	24:17 29:3	93:19 141:8	110:5,8	94:19
pushing	123:3	readiness	18:18,22	34:10	141:20	reliability	134:13
128:10	questions	137:20	19:10,12	recycle 9:23	142:12,15	73:20	149:14
139:10	11:14 14:14	reading 68:5	reasons 78:12	25:11,12	142:17	reliable	repeatedly
put 8:19 20:5	18:12 28:22	117:8,21	80:14	33:3,9	referenced	120:17	105:13
20:15,20	30:4,25	118:7,20	124:16	Recyclebank	30:13 37:23	121:11,17	report 1:18
34:17,22	36:5 55:4	ready 137:12	126:12	149:16	referencing	121:18	46:15 47:6
37:4 53:11	55:12,15	real 41:5	144:22	recycled 8:16	39:6	relies 87:8	64:19 65:2
67:5 72:12	77:6 80:25	96:19	Rebate 51:21	8:17 12:22	refinery	reluctance	66:7,13
73:4 76:17	85:22 98:17	107:21	recapture	12:22 20:10	87:10	142:16	68:5 72:6
84:25 87:14	100:21	132:20,25	43:12	20:14,15,16	reflected 31:3	150:3	72:11,14
88:2 102:4	140:13	136:15	receive 54:10	24:8	regard 6:24	reluctant	106:10
109:22	quick 22:7	138:5	received 89:9	recycles 9:25	8:22 93:19	149:12	126:9,25
120:25	quickly 73:5	140:18	95:20	recycling	regarding	remain 99:15	127:8
121:14,25	76:18	realistic	receiving	13:5,7	15:6 18:2	100:15,18	136:10
124:4	136:18	111:3	131:14	25:19 26:12	44:5,8	remaining	139:18
136:10	quite 3:21	realities	recess 117:4	27:9,23	143:5	118:25	140:16
	19:18 34:4	107:20					

Committee on the Environment
April 11, 2016

Page 16

report's 68:8	resource	127:25	136:25	SBN 101:6,25	142:8	117:24	sends 3:19
reported	155:17	128:7	rooftops 65:6	102:23	145:17	118:2	123:21
118:3	resource-st...	RFP 124:12	Room 1:6	107:19	146:15,19	Secondly	sense 22:8,11
reporter	71:11	RFPs 145:16	route 111:2	109:4	schools 1:18	66:21	22:13 25:8
158:24	resources	right 16:22	RPR-Notary	111:11	44:20,23,23	Secretary	39:14 40:13
reports 14:22	6:16 7:17	18:10 23:16	158:15	112:2	45:3,5,13	77:25	42:24 43:2
represent	45:25 46:6	23:24 25:24	rude 94:17	113:17	45:14 47:5	sections	52:17 79:12
90:17	142:20,21	30:20 31:7	rules 53:3	115:11	53:12,15	48:17	80:13
representat...	150:8	34:21 42:3	116:21	scalable	64:19,22,24	sector 52:24	106:14
74:5 96:25	respectful	46:21 58:2	117:19	115:7	65:7 67:6,9	137:23	sensibility
representing	43:17	58:21 63:8	118:5,18	scale 12:22	67:25 72:11	156:9,16	149:12
31:24 77:13	respond	83:9,11,11	run 124:12	115:15	72:15,19,23	sectors 74:7	sensible 14:9
represents	114:23	84:9 85:14	running	scales 112:13	73:5 76:17	74:10,16	sent 87:24
151:10	response	86:6 88:17	17:10	scarce 7:16	79:24 82:11	secured	89:11
reproduction	116:8	88:17 90:15		scheduled	92:12,15	134:24	separate
158:21	118:13	90:19 91:14		15:14	98:12,24	see 17:3	37:10 85:10
requests	Responsibil...	94:7 112:13	S	118:21	99:4,7,10	24:23 26:23	85:15 86:8
16:11	97:7 104:8	112:15	S 1:11	school 44:6,9	99:11,19	28:19 30:2	September
require 20:21	responsible	130:18,22	Sachs 125:9	44:11,15	100:11	33:25,25	30:12,14
66:22,25	11:25 21:13	131:10,12	Sacramento	45:10,15,18	104:22	40:17 79:2	Serenity
116:22	21:16 47:25	138:10	35:10 37:24	46:6 47:9	105:17	80:5,9	130:2,3,7
required	112:23	139:25	safe 73:9 85:7	48:8,11	106:3	82:16 83:23	serious 3:21
87:24	rest 36:7	140:8	safety 7:21	52:6,25	107:14	85:20 89:7	70:8
requirement	43:11	149:21	86:14 89:5	53:8 54:12	112:16	94:24 98:12	serve 61:13
8:9 20:17	restate 2:23	rigid 14:2	sale 131:2	65:3,10,15	113:23,25	99:18	66:8
21:13 66:18	result 8:17	32:9	Saleem 97:3	65:16,22	114:16	102:12,20	served 104:5
requirements	54:11 75:16	rise 104:16	100:25	66:2,9,12	120:7	109:12,21	serves 130:7
58:6	144:12	risk 123:2,5	101:3	66:22,25	123:22	114:15,17	service 8:24
requires 3:6	resulted	123:10	sales 9:3	67:4 72:17	128:9 132:6	122:17	23:6 96:3
12:24 90:22	70:19	127:18	Sanitation	73:4,7	132:16	129:18	129:9
RER 115:24	106:10	risks 124:9	27:14 28:19	74:23 76:16	136:10,12	139:18	131:17
119:14	results 8:10	127:13	sat 40:11	77:16 81:12	136:14	140:20	services 8:23
135:25	retrofits 93:4	Robert 5:7	save 65:8	81:23 82:5	138:3	143:8	10:17 14:6
research	95:11,23	31:13 36:8	134:21	82:16,22	139:19	144:23	142:5
17:17 18:8	return 132:13	36:10 130:4	140:9	87:25 92:2	Science 132:7	151:9	session 58:19
45:20 47:7	135:10	Robinson	saving 66:4	92:4 98:17	Scientists	156:13	117:21
151:3	returned	92:25 94:2	134:2 154:5	99:24	72:4	seeing 86:15	118:8,21
researched	43:20	96:11	savings 65:13	102:12	scores 99:21	100:18	set 27:15 59:5
12:13	returning	role 15:8 48:8	80:16 120:8	105:9,23	screen 140:18	103:13	59:11
residential	93:2,14	75:19	127:3,17	106:13,17	script 101:18	152:7	sets 6:12
52:9 69:16	95:19 96:17	100:18	133:25	119:21,24	season 27:8	155:24	setting
93:5	revenue 9:2	rolled 17:8	134:9	120:23,24	seasonal	seek 16:13	145:22
residents	9:22 44:17	rolls 108:14	135:12	122:7 123:8	27:24	seemingly	shade 148:4
39:23 70:21	46:4 128:23	roof 124:22	141:21	124:4,25	seasonal-ba...	79:5	shameful
resilience	128:25	133:10	146:14	127:14	27:18	seen 54:19	144:21,21
54:23	review 7:2,10	134:23	148:23	129:10	Seattle 4:5	102:23	share 48:9
resolution	16:11	136:23	149:3	131:25	second 3:14	142:14	120:9 151:4
1:17,17	Reynolds	148:4	152:16	132:8,19	16:24 51:20	sees 98:8	shared 29:7
43:18,22,24	1:10 6:6	roofs 136:13	saw 144:8	134:15	79:10 96:17	sell 25:18	150:22,22
47:2,3	11:4,20	rooftop 45:16	saying 90:20	136:20	113:16	144:13	sheets 68:7
119:2	64:9 68:11	69:21 72:16	94:22 95:5	137:5	116:18	selling 144:17	shop 131:11
154:17	103:25	73:16,25	96:4 138:14	138:15	117:23	send 26:17	shops 34:2
157:9,15	119:11	133:8	says 22:11	141:14	seconded	sending 100:6	short 52:15
			23:20 77:25				

Committee on the Environment
April 11, 2016

Page 17

shortly 106:15	small 13:13 23:12,20	67:25 69:9 69:11,21	137:12,13 137:16	71:17 104:11	spoke 81:15 101:20	147:10 149:18,24	stepping 27:12
shot 136:19	33:10 74:18	70:4,6	138:3,6,17	113:5	142:17	154:22	steps 3:23
show 139:15	84:13	72:10,13,19	138:21,23	sourcing 7:22	spoken 94:2	starting 112:20	10:13 17:2
showing 103:2	154:22	73:4,8,11	139:16,18	South 34:14	95:2	starts 30:16	64:25 126:3
104:23	smaller 38:25	73:16,25	142:7,15,19	77:16	sponsor 43:23	85:4 106:14	139:17
110:15,22	112:7,18	74:2,3,7,13	142:19	130:24	154:16	state 5:13	stewardship 35:3
shows 65:2	115:8	74:20 75:2	143:14	Southeast 50:11	Springside 45:8	31:19 51:17	stick 13:16
side 44:18	123:11	75:5,5,7,9	145:4	space 45:16	spur 69:9,15	51:23 52:13	38:11
46:4,5	smart 14:9	75:15,24	152:25	72:16	73:9	56:24 64:3	stipulation 21:4
156:11	smog 71:2	76:3,11,17	153:5,8,14	136:25	square 50:14	66:15,20	stock 47:11
signals 51:10	soap 9:8	78:18,22	155:15	SPARC 49:21,22	squeeze 139:24	68:24 69:12	stopping 146:11
signed 130:25	social 80:3	79:13,15,17	solar-gener... 136:15	speak 11:9	SREC 51:20	81:5 88:6,7	storing 9:13
significant 66:10 98:4	97:7 101:9	79:20 81:11	SolarCity 116:4	43:22 69:2	143:9,13	90:21	stormwater 102:24
98:16	104:8	82:18,21	Solarize 69:19	76:22 77:12	144:7,9,14	116:15	straighten 129:19
108:10,18	110:11	84:12,14,17	sold 9:7	78:3 80:2	SRECs 75:13	119:4 121:9	strapped 134:16
121:23	111:14	84:20,22,25	sole 38:22	80:22 83:19	143:16	143:20,23	strategic 7:22
significantly 49:15 78:19	socially 101:14	85:3,10,15	solely 39:2	101:22	144:13	146:7 147:2	140:18
100:12	soft 49:6	86:3,6,8,12	91:9	104:4,9	146:8,15	147:6,9,10	strategically 7:11
145:4	software 131:17	86:19 87:13	solid 38:11	108:8 143:4	stability 100:2	148:18,21	stream 12:20
signing 69:9	solar 1:18	87:19,22	Solo 32:10	154:9	stable 134:6	157:13	13:8 35:14
124:7	44:5,24	88:2,23	solution 67:15	speaks 98:7	staff 2:14 4:9	state's 67:24	37:5,7,16
silos 109:22	45:4,6,17	89:13,18	137:22	142:25	35:21 96:25	state-level 51:7	38:7
141:4	47:5,11	90:12 91:5	94:3 95:12	spec'd 136:12	staffs 128:7	stated 72:5	streamline 48:19
similar 3:7	48:6,19,20	91:9,11	95:24 96:8	special 2:11	stage 145:23	127:7	streamlined 49:11
simply 53:11	48:21,23,25	94:3 95:12	97:23 98:19	12:24 45:14	stakeholders 49:9 110:4	states 35:8	street 8:4 9:8
79:16 117:7	49:3,6,10	100:7	144:25	128:6	stand-alone 85:10,15	36:14 51:12	119:25
121:24	49:15,16,19	104:20	somebody 25:15 90:4	specific 13:3	75:14	57:20 58:5	133:6 152:6
sincere 129:3	49:22 50:8	106:3,12,16	soon 62:4	62:10 63:2	standard 51:16 57:12	70:12 74:21	Streets 27:13
single 96:13	50:9,12,23	107:10	85:3 130:19	76:19	57:18,24	75:4,11,14	28:18 32:24
sister 156:2	50:24 51:7	111:9	sooner 145:9	specifically 33:16 70:16	108:7	115:12	35:20 40:11
sisters 100:17	51:8,14,25	115:12	sorely 136:22	119:16,21	143:19	116:2	40:24 41:6
sit 60:13 88:6	52:3,15,20	116:2	sorry 25:5	120:6	standard's 66:17	128:16	41:19 42:21
site 123:6	52:24 53:2	120:13,15	62:16	specifications 8:5	standards 70:25 75:12	133:2,9,12	130:23
situation 39:24	53:5,7,13	123:21	143:14	specifics 109:15	stands 49:22	133:24	strengthen 66:15
147:16	53:14,16,23	128:9,15,16	sort 15:7	specify 23:3	143:14	134:23,25	strictly 87:20
situations 37:17	53:25 54:3	128:22	16:11,12	spectrum 38:14	start 64:2	137:17	91:10
six 41:11	54:7,8,13	129:14	17:17 19:14	speed 62:22	97:12	151:6,22	strides 7:18
61:23	54:18,22	130:2,8,12	20:13 22:23	spelled 135:19	113:17	133:24	strong 59:14
size 54:18	55:13 56:8	130:18	23:17 24:23	spend 87:10	130:9,16	134:23,25	74:11 92:17
57:17	56:15,19,22	131:15,21	24:25 26:22	103:7	145:25	137:17	stronger 58:6
skills 74:25	57:15 62:12	131:23,25	27:19 33:12	spent 77:17	started 41:10	139:17	
131:18	62:20 64:19	132:5,11,16	34:3 57:21	spin 131:20	61:22 95:8	139:17	
skipped 57:10	64:21,24	133:2,8,10	94:4,6	spirit 131:22	95:20	149:27:4	
sleeves 33:25	65:5,7 66:4	133:11,11	145:22		102:11,15	102:3	
34:2	66:11,16,17	133:14,24	sound 80:15			stepped 2:8	
slowly 13:12	66:19,24	134:19,23	sounds 12:12				
	67:2,5,11	134:25	source 51:2				
	67:12,14,20	135:8,18,24	72:8				
		136:9	sources 67:24				

Committee on the Environment
April 11, 2016

Page 18

strongly 54:14 73:2	51:21	2:12 4:10	43:11 55:4	128:3	123:16	55:2,5,24	147:24
structured 123:15	Sunvestment 119:15	5:4 6:2,21	85:2,3	153:21	133:13	56:2,4	149:13
student 17:16	super 112:12	7:10 10:6	101:17	tax 52:22	terms 4:20	60:18 63:13	150:6,7
students 68:3	113:11	10:21 11:19	103:5	53:3 54:8	27:22 37:23	64:8 68:15	154:19,20
87:21 89:12	supervision 158:23	11:24 12:3	107:14	56:12 75:25	52:15 76:13	68:25 76:22	156:4
91:23 99:6	supplies 8:13	14:7 17:23	112:14	76:3 121:8	91:18 106:4	80:21 81:3	think 15:13
99:8,17,20	23:15 61:6	19:15 20:12	116:20	123:13	114:23	81:6 82:24	16:21 17:4
102:18	Supply 106:10	23:9 46:17	122:10	125:17,18	153:14	82:25 83:5	17:21 18:23
108:2	support 6:11	47:19,21,24	125:24	126:6,7	Terrific 92:20	84:3 85:23	19:11 20:3
136:16	11:10 59:10	48:2,12	126:14	144:8 145:8	test 99:21	92:18,22	22:24 23:13
138:20	support 6:11	49:8 53:20	129:24	145:10	testified 24:6	96:22 97:15	24:5 25:9
study 45:19	76:5 78:13	60:25 61:24	139:17,24	Tax-exempt 52:24	154:2	97:20 98:12	25:14,21
66:23	80:2 100:14	62:2 76:21	148:25	taxpayer 144:18	testifies 26:3	100:20	26:14,15,22
Styrofoam 3:2,3,4,8,10	106:16	102:6,13	151:17	taxpayers 65:8 83:14	testify 14:13	103:22,25	27:7,17,25
3:10,15 4:8	129:22	110:7,16	156:22	105:18	36:20 68:14	104:3	32:18 39:16
22:9 23:18	144:16	124:11	taken 25:20	tea 153:16	97:22	106:18,21	42:22 44:6
24:7 25:23	supporting 111:14,15	157:5	35:14 158:6	teachable 157:3	106:19	106:24	57:13 58:7
28:10 33:8	supports 11:8	sustainable 3:19 7:12	takes 39:2,6	teacher 99:18	115:13	115:19,21	58:21 59:20
38:23	14:8 73:3	7:20 10:7	114:15	99:23	116:6	117:15	82:2 86:3
subject 95:2	supposed 125:21	11:2 15:2	145:11	teachers 65:16 97:2	testifying 25:16	118:22	88:16,24
submit 23:20	sure 15:10	17:13,22	talk 16:25	97:13,19	testimonies 107:3	119:3,6,7	92:25 95:15
76:25	21:17 22:16	69:18 97:5	28:18 62:15	technical 50:2 78:14	testimony 5:15 11:13	119:13	101:19
subsequent 76:2	29:17 31:3	101:5,16	62:15 93:15	technically 13:3 80:14	127:20	127:20	102:7,18
subsidize 144:9	39:24 42:18	108:5 136:2	109:15	technologies 62:22	128:4,6	128:4,6	103:14,19
substantial 46:13	45:24 59:15	sustainably 16:4	120:22	156:10	140:3,4,14	140:3,4,14	106:5
Success 149:23,25	60:23 62:9	system 17:9	121:2	technology 78:24 79:21	140:25	140:25	107:12,13
successful 108:22	62:21,23	17:10 38:2	talked 35:22	107:11	149:4	149:4	107:16,19
successfully 9:7	83:10 85:5	53:25 54:19	122:24	154:4	150:17	150:17	108:9,15
suggestions 16:7	89:18,20	65:16 78:17	125:17	155:20,23	153:22,25	153:22,25	109:4,15,19
suits 137:20	110:3	78:21 79:16	126:19	tee 115:11	154:13,14	154:13,14	110:2,13
sulfur 105:5	111:14,16	84:13	150:20	tell 12:11	156:18	156:18	111:9,18,19
sum 67:25	112:14	121:13,18	talking 32:8	28:3,8 40:4	63:14 64:4	157:7,11,17	111:23
127:12	114:19	147:13	44:16 57:4	78:11,15	77:2 78:9	Thanks 68:18	112:22,24
summary 48:18	115:6	system's 72:18	57:6,7	84:4 103:9	96:23 97:11	thing 33:13	113:7,16
summer 17:16 18:3	126:15	systems 54:16	92:24	153:12	115:22	34:3 83:10	114:6,8
35:19 44:22	146:3	69:25 78:7	110:10	155:5	116:17	101:22	115:3
105:16	147:23	78:19 79:2	128:18	tells 23:11,11	117:10	102:19	120:11
sun 121:20	150:21	80:11	140:11	temperatures 104:16	118:25	109:25	127:8
153:18	154:10	sytem 50:10	146:20	ten 136:14	119:6	110:2	132:24
155:17	157:2	T	tangible 3:22	tend 112:5	132:14	113:16	138:14
Sunshine	surplus 8:25	table 5:11	96:19	term 52:19	140:6 157:7	135:11	142:7,15,16
	9:13,15	31:17 46:15	140:19	121:22	testing 99:19	143:22,25	143:22
	surrounding 57:20 58:5	47:14 63:24	task 50:16		thank 2:3,11	things 17:14	146:4,6
	75:4	77:5 97:9	Taubenber... 1:12 2:17		4:9,22	32:22 33:14	149:10
	suspended 117:20	116:10	2:22 18:15		11:11,12,19	33:21,22	150:5,14
	118:6,19	tackling 71:22	19:4,16,21		14:12,15	35:7 36:24	154:3
	sustainability	22:5 24:3	22:5 24:3		21:25 22:6	57:15,25	155:15
		24:18 26:4	24:18 26:4		23:24 26:4	62:25 65:14	156:7
		28:24 29:6	28:24 29:6		26:8 29:10	83:4 84:5	thinking 90:8
		32:19	32:19		31:7,9 42:6	108:20	100:4
		105:12	105:12		42:12 43:5	109:21	109:10
		117:14,15	117:14,15		43:6,8 44:2	142:9	113:23
					46:10,25	145:12	145:25

Committee on the Environment
April 11, 2016

Page 19

third 17:5 30:15 70:11	timing 27:3 title 4:14 46:24 to-do 58:10 today 2:9 4:2 6:11 11:10 45:21 48:16 55:3 62:10 62:17 63:2 64:12,23 68:7,14 76:23 77:13 77:15,18 80:22 97:22 99:4,19 104:4,9 109:20 122:8 124:19 138:4,9 141:12 146:16 150:20 today's 11:22 128:5 Tolson 40:12 toner 8:16,18 tons 8:18 top 88:3 total 3:13 50:17 70:4 touch 32:16 35:6 tour 139:14 156:23 towns 70:19 track 23:10 128:22 tracking 23:5 trade 77:24 89:3 114:13 traders 152:5 traffic 39:22 train 87:20 training 63:20 74:19 74:22 77:20 79:19 84:6 84:17 85:16 88:10 95:7 113:15 129:14 130:8,10	131:15 137:21 138:23 transcript 158:8,21 transferring 144:19 transgressi... 104:25 transport 34:7 Transporta... 62:3 131:6 traveling 146:25 treatment 50:16 trees 70:7 tremendous 79:3,12 105:24 153:8,10 Trevor 4:25 5:17,21 6:8 TRF 149:23 tried 155:5 triple 68:2 151:21 trips 26:18 troubled 129:16 truck 39:22 trucks 34:20 39:21 true 13:3 112:25 158:7 truly 46:12 try 35:17 39:23 83:3 143:21 150:5,6 trying 26:11 37:10 38:14 58:16 88:21 90:6 92:12 94:17 95:16 96:13 109:4 110:4 115:15 116:23 140:9 Tsou 97:6	103:24 104:5 turbine 59:6 turn 61:11 65:13 turned 33:10 turning 92:14 Twenty 19:5 126:10 two 10:13 16:25 17:14 30:13 36:16 47:19 48:21 51:12 57:15 58:12 86:25 96:21 125:22 126:4 128:20 130:4,15 136:8 152:24 two-dimens... 37:18 tying 98:23 type 13:10 56:7,10,23 60:7 93:20 140:10 types 25:11 26:12 27:9 131:17 156:12	22:23 understood 23:13 147:24 underutilized 124:22 undoubtedly 105:20 unfeasible 25:22 unfortunat... 51:22 120:17 unique 82:14 100:8 112:11 uniquely 138:13 unit 9:6 United 35:8 70:12 151:6 151:22 universities 34:22 unpreceden... 67:8 unqualified 86:17 unserviceable 8:25 unsustaina... 6:17 unveiled 50:9 up-front 65:24 120:16,19 122:12 132:22 upfront 126:23 upgrades 137:15 upper 131:19 urban 3:16 17:23 urge 16:19 urgency 104:15 145:13 urgent 104:10 urges 76:15 usable 45:16 understates	61:11 use 3:7 11:2,6 14:10 37:11 47:10 48:4 61:12 67:2 67:24 69:23 72:18 104:20 131:16 141:14 145:8 155:19 Utilities 62:4 utility 61:8,9 V vacancies 99:15 valuable 146:16 value 38:4,13 120:21 121:8,20,23 122:14 126:23 variety 69:15 98:6 131:16 various 9:24 65:20 121:8 vehicle 53:21 61:6 vehicles 8:6 9:8 145:5 vendors 21:7 venture 107:17 versus 27:10 122:3 123:11 126:7 151:21 vested 125:3 viability 102:7 viable 102:8 110:20 vibrant 113:20,25 Vice 127:25 viewing 123:14 violence 129:6 137:18	141:8,8 Visa 154:25 155:3,6,11 vision 67:8 109:12 visited 136:11 voice 59:14 62:16 109:10 volatile 72:23 volume 34:24 volunteers 64:16 vote 43:19 vulnerable 98:3 W wage 111:8 132:10 wait 100:23 139:22 Walker 63:18 68:17,18,19 77:3 93:23 93:24 Wall 119:25 152:6 walling 146:7 148:21 Walter 97:6 104:5 want 4:9 18:6 20:25 26:11 36:4 38:15 43:12,23 59:11 60:7 63:15 64:8 65:15 67:23 68:10 78:11 81:6 82:24 83:6,10 96:16,18 101:22 106:22 107:9 110:25 115:11 116:19,20 117:7 119:3 120:9,14 124:25 125:13 127:5 129:7	131:9 132:15 140:12 150:21 153:25 wanted 29:16 59:3,5 81:5 107:7 152:20 wanting 94:3 wants 135:11 warehouse 130:22 warm 33:22 warming 70:20 warranted 133:14 warranties 122:19 Washington 4:5,7 waste 9:19,21 9:24 12:8 12:20 35:14 105:17 water 12:9 13:16 50:10 50:11,16,20 149:11 way 9:15 23:7 39:22 44:24 45:7 46:5 46:13 48:14 56:7,20 57:25 59:24 72:12 82:5 82:10 84:13 87:18 96:2 96:7,19 102:7 104:22 107:21 109:6,8 111:10 112:23 140:15,19 140:22 141:5 142:10 150:7 156:13,15 ways 13:4
----------------------------------	---	---	---	--	---	--	---

Committee on the Environment
April 11, 2016

Page 20

16:14 44:19	36:14 57:2	winter 105:15	132:5	59:9 92:5	141:7	45:16	73:1 74:1
45:24 71:22	114:24	wise 120:11	workers	wrap 60:7	YouthBuild	14 36:13	75:1 76:1
104:19	122:24	146:9	63:22 77:9	written 17:3	74:22	15 18:25 70:3	77:1 78:1
113:24	125:6	withstand	124:20	76:25	129:10	119:20	79:1 80:1
156:12	128:19	32:15	workforce	wrote 144:3	131:24	150 88:12	81:1 82:1
we'll 11:14	130:25	witness 5:10	74:5,7,9,12			126:10,10	83:1 84:1
15:5,9	131:4,5	31:16 36:8	74:14,21	X	Z	148:8	85:1 86:1
20:15,22	133:17	46:15 47:13	83:20,25	Y	zero 132:22	16 128:19	87:1 88:1
36:7 62:4	146:22	63:23 97:8	115:14	Yard 79:4,5,9	134:7,13,14	160 88:8,13	89:1 90:1
64:2 77:6	151:3 153:7	116:9	137:20	Yeah 36:9	134:20	90:22 91:2	91:1 92:1
83:3 97:12	wealth 82:19	Witnesses	138:5	40:9 61:22	135:21	91:6	93:1 94:1
100:23	weather	5:10 31:16	working 7:9	77:3 92:9	136:17	160110 1:14	95:1 96:1
120:22	71:13	47:13 63:23	9:12 10:5	109:13	zero-cost	2:20 4:15	97:1 98:1
139:2	website 68:6	97:8 116:9	13:23 15:17	year 27:6,21	132:18	6:12 11:5	99:1 100:1
we're 15:16	week 44:7	Wolf 56:14	21:22 68:23	76:3 80:5	Zoe 63:16	11:23 14:8	101:1 102:1
17:6,10,15	99:12	woman	73:3 77:17	81:17 88:9	64:2,6 81:8	117:10,17	103:1 104:1
17:23 20:7	weeks 129:2	130:14	81:9 95:18	91:2,7	94:10	118:3,16	105:1 106:1
20:17,20	weight 37:14	women 77:22	101:25	128:23		157:9	107:1 108:1
22:9 32:8	welcome	80:8,19	104:24	134:2,2	0	160110/RE...	109:1 110:1
36:20,24	43:10,10	140:10	115:14	139:2 152:8	01-07 8:3	3:1 4:1 5:1	111:1 112:1
38:5 39:5,9	76:25 80:24	wonderful	119:20	year-plus	1	6:1 7:1 8:1	113:1 114:1
41:4 43:16	97:6 103:23	128:17	121:19	126:2	1 70:13 73:23	9:1 10:1	115:1 116:1
44:16 58:16	119:10	wondering	123:4	years 24:25	151:10	11:1 12:1	117:1 118:1
60:25 68:21	well-paid	108:8	130:17	25:10,21	1,000 133:20	13:1 14:1	119:1 120:1
88:21 89:16	73:19	work 2:13 8:7	138:22	34:12 36:16	1,100 75:7	15:1 16:1	121:1 122:1
89:17,18	well-paying	9:17 14:19	154:8	51:9 59:13	84:19 86:10	17:1 18:1	123:1 124:1
90:6,11	73:9	15:3 38:7	works 7:24	61:23 68:25	86:11,13	19:1 20:1	125:1 126:1
91:25 92:3	well-positio...	42:19 49:18	8:2,7 42:19	73:20 87:2	1,200 32:6	21:1 22:1	127:1 128:1
92:13 97:24	75:18	56:21 60:21	49:4 89:19	87:3 89:11	1,300 32:6	23:1 24:1	129:1 130:1
108:3,13	went 84:17	72:2 76:15	135:3	89:14 102:2	1.5 28:8	25:1 26:1	131:1 132:1
110:3,15	93:8 101:25	78:5 80:10	139:16	121:14,16	1.7 50:17	27:1 28:1	133:1 134:1
111:16	119:24	81:7,13	Workshop	122:22	1.30 1:7	29:1 30:1	135:1 136:1
112:13,14	129:14	82:25 87:9	132:8	125:23	10 8:18 18:25	31:1 32:1	137:1 138:1
112:19,20	West 132:9	92:2,14,25	138:15	126:4 127:9	19:5,17	33:1 34:1	139:1 140:1
114:12	138:15	93:13 96:11	workshops	128:11	125:21	35:1 36:1	141:1 142:1
115:7	wheel 95:17	101:24	69:22	130:15	126:4,7	37:1 38:1	143:1 144:1
116:18,22	whim 59:12	109:9,19	113:14	131:6	10,000 8:20	39:1 40:1	145:1 146:1
117:3	whispered	120:13	world 32:3	133:21	68:22	41:1 42:1	147:1 148:1
118:23	140:17	125:25	85:18	134:11	100 8:17	43:1 44:1	149:1 150:1
119:20	widely 10:10	126:15	125:10	139:4	20:10,14,15	45:1 46:1	151:1 152:1
121:2	wildlife 3:17	129:18,20	worldwide	152:24	20:16,21	47:1 48:1	153:1 154:1
128:22	willing	130:5 131:8	70:15	153:9	34:9 69:10	49:1 50:1	155:1 156:1
138:21,25	126:23	131:12	104:14	York 146:22	72:15	51:1 52:1	157:1
139:11	127:12	136:3,13,24	worries 94:21	young 77:21	119:19	53:1 54:1	160211 1:17
142:2	willingness	137:3 141:4	worth 73:21	80:8,19	139:5 153:9	55:1 56:1	47:2 119:2
144:12	35:23	145:3	75:10	82:15 83:12	11 1:7 149:25	57:1 58:1	157:10,15
145:23	win 68:2	146:16	119:21	104:23	12 36:18	59:1 60:1	17-600 1:14
146:20,21	win-win-wi...	147:7 149:2	135:24	129:3,8	12- 151:13	61:1 62:1	4:16
146:24	156:20	149:19	148:11	youth 74:24	12-year 52:3	63:1 64:1	17-year
149:21	wind 58:25	worked 37:2	worthwhile	94:3 102:12	150:23	65:1 66:1	150:24
we've 14:24	59:6 69:7	48:10 49:9	125:18	129:6	125 70:3	67:1 68:1	151:14
15:2,23	winners	49:13 50:6	wouldn't	137:18	13 127:8	69:1 70:1	175 99:15
17:8 23:13	112:10	114:24	23:21 39:19		133,000	71:1 72:1	18 41:2,20

Committee on the Environment
April 11, 2016

Page 21

128:17	3:50 157:19	66:1 67:1	<u>5</u>				
138:25	30 8:15 20:9	68:1 69:1	5 89:11				
185 99:15	20:18,21	70:1 71:1	50 139:4				
1990 34:11	36:13 53:2	72:1 73:1	148:6				
1998 69:8	54:8 125:19	74:1 75:1	500 99:13				
1999 84:15	125:23	76:1 77:1	500,000 9:3				
144:8	126:3,6,11	78:1 79:1	550,000				
<u>2</u>	126:16	80:1 81:1	133:19				
2 5:6 31:11	127:8 139:3	82:1 83:1	134:12				
104:16	145:10	84:1 85:1	<u>6</u>				
2,500 84:16	147:11,14	86:1 87:1	6,000 61:8				
20 8:10 19:2	31 84:14	88:1 89:1	60 147:14,15				
19:18 73:20	32 125:7	90:1 91:1	60-page				
75:6 99:11	32-hour	92:1 93:1	148:6				
126:8	89:12	94:1 95:1	60,000 50:14				
133:25	37 72:17	96:1 97:1					
134:3	3rd 44:11	98:1 99:1	<u>7</u>				
147:11,14	<u>4</u>	100:1 101:1	70 120:19				
200 128:22	4,000 44:23	102:1 103:1	121:7				
139:5	67:9 73:19	104:1 105:1	122:12				
2004 144:8	4,500 78:4	106:1 107:1	700,000				
2008 49:2	90:17	108:1 109:1	121:13				
128:16	4/11/16 3:1	110:1 111:1	75 32:4 70:5				
2009 119:19	4:1 5:1 6:1	112:1 113:1	<u>8</u>				
147:10	7:1 8:1 9:1	114:1 115:1	8,000 86:9				
2011 50:8	10:1 11:1	116:1 117:1	80 20:14				
2012 49:13	12:1 13:1	118:1 119:1	67:22 84:20				
2013 75:6	14:1 15:1	120:1 121:1	86:12 88:16				
2015 69:17	16:1 17:1	122:1 123:1	88:18 90:21				
2016 1:7	18:1 19:1	124:1 125:1	122:21				
2017 30:12	20:1 21:1	126:1 127:1	82 133:11				
30:14	22:1 23:1	128:1 129:1	<u>9</u>				
2018 30:17	24:1 25:1	130:1 131:1	90 33:19 91:2				
30:18,21	26:1 27:1	132:1 133:1	90s 155:2				
2023 152:8	28:1 29:1	134:1 135:1	98 77:14 78:5				
2050 72:9	30:1 31:1	136:1 137:1	78:12 79:18				
21 73:12	32:1 33:1	138:1 139:1	90:18,24				
21st 6:14	34:1 35:1	140:1 141:1	98's 77:19				
25 73:17	36:1 37:1	142:1 143:1	9th 44:10				
122:22	38:1 39:1	144:1 145:1					
25-year	40:1 41:1	146:1 147:1					
133:13	42:1 43:1	148:1 149:1					
25,000 70:7	44:1 45:1	150:1 151:1					
250 90:25	46:1 47:1	152:1 153:1					
250-kilowatt	48:1 49:1	154:1 155:1					
50:12	50:1 51:1	156:1 157:1					
26 140:22	52:1 53:1	40 65:4					
26th 15:15	54:1 55:1	40,000 64:15					
2nd 133:7	56:1 57:1	400 1:6					
<u>3</u>	58:1 59:1	41 45:3 67:10					
3 84:13	60:1 61:1	444 133:9					
3,000 121:14	62:1 63:1	45 68:24					
	64:1 65:1	49 99:8,10					