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**ORANGE COUNTY
CLEANTECH SYMPOSIUM SERIES**

SECOND CLEANTECH SYMPOSIUM

Date: January 21, 2009
Time: 8:00 a.m. - 11:15 a.m.
Location: UCF Executive Development
Center
36 West Pine Street
Orlando, Florida
Reported by: Leslie Richmond, RPR

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**Second Symposium, January 21, 2009
Downtown Executive Development Center
University of Central Florida**



Sponsored by:

Agenda – Current Trends/Opportunities

8:00 - Registration

8:15 - 8:20- Opening Remarks & Welcome – John Lewis, Economic Development Administrator, Orange County Government

Review of Orange County Clean Initiative

Discuss Next Step in the Process

8:20 – 8:30 - State of Venture Capital Investments in Cleantech for 2008 – Kirstie Chadwick, Director, UCF Venture Lab

8:30 - 9:00 - Overview of Cleantech report/study – Dr. Sean Snaith, Director, UCF Institute for Economic Competitiveness

Marielle Granjean, Cleantech Project Lead, UCF Institute for Economic Competitiveness

- Purpose
- Data Collection
- Define resources
- How used

9:00 – 9:45am - Summarize Current Trends/Opportunities – James M. Fenton, Director, Florida Solar Energy Center (FSEC)

- Hot Topics in Clean Tech
- Sharing of Information around the Hottest Focus Areas

9:45 – 10:00am Break

10:00 - 11:15 - Major Company Presentations

Discussion areas within segments such as energy generation and storage, transportation, water, building codes, environment/air, and other areas that are gaining the most attention both from investors and economic development agencies in the leading clean tech regions.

- Siemens Energy Orlando – Frank Bevc, Director, Technology Policy and Research Programs
- Mitsubishi Power Systems Americas – Jim Williams, Vice President, Service and Manufacturing Operations

11:15 – Closing Comments

1 P R O C E E D I N G S

2 MR. LEWIS: All of us who are speaking today need
3 to stand at the podium, and, Sean, you can't go
4 wandering around like you usually do or we'll miss you
5 on Orange TV.

6 Good morning and welcome to our second Cleantech
7 symposium. Our first symposium was held on November the
8 5th, the day after a long election day. I stayed up
9 until 3 o'clock in the morning or a little later than
10 that myself that night. Today is our second symposium
11 and it's the day after a very long inaugural day. We've
12 got to stop meeting like this. Our next symposium is
13 February the 18th, and I looked in Google and I couldn't
14 see anything exceptional happening on February the 17th
15 or 18th. I think 18th is Gambia National Day and so I
16 don't think we'll lose too many people from that, but by
17 February the 18th, I think we'll be back on a schedule
18 that is a little more in sync with everyone else's
19 schedule.

20 Meanwhile, I think we've got a very exciting agenda
21 today that's going to keep everyone on the edge of your
22 seats. Our purpose, of course, is to become educated
23 about, learn about and help promote Cleantech economic
24 development in not just Orange County but Metro Orlando
25 and Central Florida. We have a lot of partners in this

1 endeavor. I mentioned at our first symposium that 15
2 years ago when I came here, our partner really was the
3 Economic Development Commission in terms of economic
4 development. There was no Enterprise Florida at the
5 time, we had no technology incubator, we had no venture
6 lab, we had no SBDC, at least in the way we have it
7 today. We didn't have the Institute for Economic
8 Competitives. We have all those entities today. And so
9 when we look in terms of economic development, all of
10 those entities are part of our economic development
11 strategy. So now we've got look beyond that to
12 Cleantech and recognize that the Florida Solar Energy
13 Center, the Nano Technology Science Center, all of those
14 institutions and programs at UCF need to be an integral
15 part of our economic development program. So I want to
16 especially thank our key sponsors for the Cleantech
17 symposiums and especially the UCF venture lab which is
18 managing and moderating the symposiums, and also the UCF
19 Institute for Economic Competitiveness that is
20 conducting a companion economic Cleantech study.

21 A number of cities and communities have already
22 completed their cleantech studies, San Diego being one
23 of them. This was in the reference guide that we
24 distributed at the first symposium, but if you look at
25 Boston, Austin, and about every place in between, you'll

1 find some sort of Cleantech studies or Cleantech
2 symposium series of round tables. In a lot of those
3 communities, they do the Cleantech study first, then
4 they start a round table session to figure how to
5 implement it. We've kind of looked at that and learned
6 from that and are conducting them both at the same time.
7 They were a little bit out of sync in the beginning just
8 because it took a little longer to implement some of the
9 steps in terms of the Cleantech study, getting a project
10 manager on board and getting the internship team
11 together and so forth, but everything is in sync now and
12 we're running fairly smoothly.

13 I want to, before we begin this morning, especially
14 thank two other sponsors. One is AquaFiber. They're
15 helping to sponsor today's event and I would encourage
16 you to look at their website and see what they're doing
17 and commit a little bit of it to memory. When we first
18 started this whole endeavor, we knew that Cleantech was
19 the buzz word in San Diego, Boston, and Austin, but we
20 didn't know exactly what that was, and when I would ask
21 people, well, name five Cleantech companies in Orlando,
22 we all had a little bit of a difficult time doing that.
23 We've come to find out that there are at least six or
24 seven emerging start up Cleantech companies that are
25 being serviced by the venture lab and the technology

1 incubator. They were the focus of our first symposium,
2 along with the institutions and entities and centers at
3 UCF. But we've also come to realize that, gee, when you
4 look at some of our largest employers, they have a
5 significant amount of Cleantech also. Siemens Energy,
6 Mitsubishi Power Systems, for example. And those
7 presentations are the key part of today's presentation.
8 But I want to thank AquaFiber for sponsoring today's
9 event. I encourage everyone to go into their website
10 and see more about that.

11 Also, I want to thank Sweet by Good Golly Miss
12 Holly in Waterford Lakes for providing the breakfast
13 cupcakes today. My motto has always been that a cupcake
14 a day is okay. So maybe you want to adopt that as your
15 New Year's resolution and support Sweet. And there is
16 their phone number, and I encourage you to go to their
17 website and see all the things they can do for your next
18 event.

19 I also want to thank, and I think we all need to
20 thank, Orange TV, Barry Keller, Orlando O'Heather and
21 Mike Buslovich. They're the staff today that are
22 videotaping the seminar series. As you know, we provide
23 a transcript, full transcript, of every word that is
24 spoken at these symposium series, and we have videos of
25 every single presentation. Hopefully, in the next

1 couple weeks we'll have a new Orange County website with
2 all that material on it. In the meantime, I think you
3 were all e-mailed that material. I hope that doesn't
4 keep you from coming to these symposiums. It occurred
5 to me that, gee, I can get the transcript, I can get all
6 the videos, why show up at 7 o'clock in the morning.
7 But if you do miss the symposiums, I think you are
8 missing a lot because you're not part of the discussion.
9 The audience today and our other symposiums are really a
10 critical component of the symposium series and the
11 study. In the Cleantech study, for example, there will
12 be a section that lists all the companies and
13 organizations that have an interest in Cleantech and
14 support Cleantech, the contact information, a
15 description and so forth, and if you haven't been
16 contacted yet in order to -- for us to collect that, you
17 will be, because we want to present very fully the full
18 extent of our Cleantech community here. And Orange TV
19 is doing all of the videotaping of all of the sessions,
20 and I think they should be applauded for that because
21 Orange TV, just as with other counties and other
22 departments and groups in Orange County, have to watch
23 their budget, and they're under the Budget Act, and so
24 I'm trying to do all I can to express our appreciation
25 for Orange TV this morning. Let's give them applause.

1 Also, we, of course, want to thank Jim Weaver and
2 the UCF Downtown Center for hosting these events. This
3 is a great room and a great facility to have these
4 events in, and we thank Jim Weaver and UCF for that.

5 One of the -- a couple of slides that I -- and I've
6 got five minutes so I figure I've got about four minutes
7 left.

8 I want to emphasize at least where we are in terms
9 of just knowing what Cleantech is. These are from our
10 first symposium. Cleantech encompasses a diverse range
11 of innovative products and services that optimize the
12 use of natural resources and reduce the negative
13 environmental impact of the use while creating value by
14 lowering cost, improving efficiency, and providing
15 cleaner performance. To me, that's probably the best
16 definition of Cleantech that I have come along, yet
17 includes all the aspects of Cleantech. That definition
18 may change a little bit as Marielle and Sean move
19 forward with the study and we hear from you, but that
20 may be a good starting place as a definition from Ernst
21 and Young. If you look through there, there are really
22 three elements of that. One is innovation, one is
23 green, going green, reducing negative environmental
24 impacts, and the other is value added. So an easy way
25 to remember what Cleantech is is a very -- by a simple

1 formula. Cleantech is equal to green, plus innovation,
2 plus value added.

3 Clean is more than green. Cleantech economic
4 development means attracting, creating and growing the
5 innovative high value companies that produce the
6 products and provide the services that will allow us and
7 the rest of the world to go green. A working definition
8 of Cleantech, again, that might be adjusted or modified
9 somewhat as we hear from you and as we move forward with
10 the symposium series.

11 There are two parts, of course, to our initiative.
12 The Cleantech economic study is we'll look at our
13 assets, our capabilities, our potential, and the
14 possibilities, what we hope to come out of from this
15 Cleantech series. And the study is maybe five to ten
16 very actual items that can be part of Mayor Crotty's
17 lasting legacy in getting those started and also provide
18 a starting place for the new mayor. So there's a rhyme
19 and reason for having this economic study provide
20 guidance. With all of the Cleantech expenditures coming
21 from hopefully the new Obama administration, there is
22 going to be the money to do some of these things. And,
23 of course, as I mentioned, the Cleantech symposium
24 series, which is an integral part of the study, we take
25 information from the symposiums, it goes into the study.

1 As the studies develop, information and questions and
2 surveys will be coming out of the study for you to
3 participate in.

4 So that's really where we are with the Cleantech
5 symposiums. Thank you all for coming. Kirstie Chadwick
6 and Christa Santos who's working with Kirstie have just
7 done an outstanding job in putting these together and
8 managing them. At our February symposium, we hope to
9 have Jacques Chirazi, who is the manager of the San
10 Diego Cleantech initiative, here to tell us the San
11 Diego story so we'll learn from them. Along the way, if
12 you have an inclination that you would like to
13 contribute and help sponsor one of these symposiums,
14 such as AcquaFiber has stepped up to do today, please
15 let Kirstie or I or one of the other people associated
16 with the effort know so that we can engage you.
17 Bringing in someone from San Diego involves a little
18 more expense, so we're especially looking for someone to
19 help sponsor that event.

20 And I also want to recognize our court reporter
21 today who's with Zacco and Associates, and she is the
22 one that is sitting in the front row and taking down
23 every word that you say. So every word that you say
24 means something and we are going to keep it forever.

25 Thank you very much and it's my pleasure to

1 introduce Kirstie Chadwick, the director of the venture
2 lab, who will be our moderator for today, and one of the
3 things that the venture lab has done is joined the
4 Cleantech network which is probably the world's premiere
5 organization for Cleantech companies, investors and
6 organizations interested in Cleantech. And Kirstie and
7 Sean Christenson with the venture lab have attended
8 these forums in Washington, in California, and they're
9 bringing back what they have learned to share with you.
10 And the first time we're doing that is with Kirstie this
11 morning. So I think I already used a minute or two of
12 her time, so I apologize for that.

13 MS. CHADWICK: Thanks, John.

14 MR. LEWIS: Thank you very much.

15 MS. CHADWICK: Okay. If I can find my slides here.
16 Okay. New Microsoft. Where is the little icon.

17 All right. As John mentioned, I'm the director of
18 the UCF venture lab, and for those of you who are not
19 familiar with the venture lab -- so the venture lab is
20 four years old. It was founded -- it's a joint
21 partnership between Orange County, UCF, the high tech
22 corridor council, and a little support from an angel
23 investment group called the Winter Park Angles, and its
24 function is to help very early stage technology start
25 ups that are interested in getting things going from --

1 as a business entity to do just that. So we help them
2 with their business planning, potentially with
3 fundraising, just sitting there as coaches and mentors.
4 We're a group of folks that have all had our own
5 companies, we've all raised venture capital, stuff like
6 that. It's just a free resource that's available solely
7 for technology entrepreneurs that are wanting to start
8 high tech businesses in Central Florida.

9 Today, I'm here to chat about some data that I
10 picked up as part of being a member of the Cleantech
11 network, and this particular organization focuses on
12 early stage Cleantech companies, and it's integrally
13 tied to the venture capital community because so many of
14 the economies that are based on Cleantech have a
15 fundamental threat of early stage venture backed
16 technology companies. So the investment world in this
17 particular domain is particularly important to economic
18 development. And then that, combined, of course, with
19 the established corporations like Siemens and Mitsubishi
20 and what not together are what would be -- what make
21 these economies out like in California and Austin and
22 what not hum and use this Cleantech domain as a
23 foundation for doing that.

24 Okay. So my presentation is their data, not mine.
25 I want to make sure everybody's clear that this is

1 coming straight out of a presentation basically cut and
2 pasted from, with permission. So this is -- starting
3 last year -- actually, the last six years in the world
4 of venture capital have been rapidly growing with
5 respect to investments and Cleantech. And so last year
6 was the sixth consecutive year where there was a large
7 growth, as was the case in pretty much everything else.
8 Q-4 pretty much stunk and we'll see if that rebounds
9 here. But this particular subdomain in the world of
10 venture capital probably has the best chance of
11 rebounding if anything does.

12 Solar was the dominant investment theme. However,
13 we'll talk about that more later because early stage
14 investments in solar are not necessarily growing, but
15 the later stage large mezzanine type rounds are. So
16 we'll get into that.

17 Smart grid and wind and biofuels were the other
18 sections that did well, but solar dominated with 40
19 percent of the investments going into solar.

20 2009 was a year of transition that the group
21 expects, you know, this year to also be depressed. No
22 surprise, I'm sure. Everything else is in the same
23 boat. But in the long run, the drivers that are driving
24 the Cleantech focus and investment will remain intact
25 over the course of many years, and so, therefore, the

1 group believes that in the long run this particular
2 section will continue to be a strong one to focus on.
3 That's just because China and India are going to
4 continue to grow and migrate towards the middle -- upper
5 middle class. Therefore, their energy demands are going
6 to grow, which is going to create that shortage, which
7 is driving some of the efforts that we're all focused
8 on. Of course, climate change is still a key issue as
9 well.

10 Okay. I think I've covered this and, for the sake
11 of time, I'm going to keep trucking through slides. As
12 we already mentioned, Q4's very significant downturn.
13 The last time they say that big of a drop in that
14 particular sector was back in 2006. As I had mentioned
15 previously, 40 percent of the venture capital dollars
16 went into solar. You can see, you know, based on this
17 particular chart how big of a differential there was
18 between solar and the next largest category, which was
19 biofuels. And then the other categories are, you know,
20 in single digits with respect to percentage of total
21 dollars invested.

22 Okay. Solar. Let's start with that. I'm going to
23 go one by one through the subdomains. This particular
24 group, again, which spends their entire, you know,
25 function of focusing on venture capital investment in

1 Cleantech, feels fairly strongly that solar is
2 experiencing a bubble. And that's real important for us
3 to pay attention to because of where these VC dollars
4 are with respect to again economic development. These
5 early stage companies are often the drivers. Most of
6 the dollars that did get invested last year were in thin
7 film PV, which is up 315 percent from 2007. You can see
8 the big jump there. The second highest category was
9 concentrated solar, which sounds like it was huge with
10 672 percent, but it had a tiny base to start from.
11 We've seen a couple of those companies coming through
12 both the Winter Park Angels and the venture lab. So
13 even here in Central Florida, there's a couple of
14 companies in the concentrated solar space that we're
15 aware of. But, as I mentioned, the reason these numbers
16 are so skewed towards solar is because there is these
17 huge mega rounds of mezzanine and later stage funding
18 going through which are kind of distorting the numbers,
19 because if you look at the seed stage dollars, they're
20 very consistent every year. They're not increasing. So
21 there is not new early stage investment increases going
22 on in solar, only later stage. So that's a sign that
23 that particular market is maturing, and from an
24 innovation perspective, we may want to start looking,
25 you know, at some of the other categories.

1 Just to reiterate the point, the top 10 deals done,
2 every one of them was over a hundred million dollars in
3 a single round of investments in those companies, so --
4 and we'll get into the other domains and you'll see the
5 difference. So it's, again, later stage.

6 Next category is biofuels. It was -- there was an
7 increase last year from 2007, but it's down from 2006.
8 This particular metric occurred this way because of the
9 backlash on using corn as ethanol, and so as many of you
10 know that have studied or paid attention to this, the
11 food shortages were creating -- people -- that's on TV,
12 isn't it. Anyway, corn was the foundation of the first
13 round of biofuels, and, of course, with all the food
14 shortages in third world countries, the press got a hold
15 of that, and turned out that ethanol is not necessarily
16 as effective, or it's -- actually, my gas mileage in my
17 car is worse with ethanol and certain things like that.
18 But it did increase this last year, but it was led by
19 algae and cellulosic type of technologies. And they had
20 been grossing -- there's a belief that this particular
21 subdomain will continue to grow. We have some great
22 research going on in this domain out at UCF. Dr. Henry
23 Daniels is doing some good work there, and I'm sure
24 there is many other efforts throughout the state and in
25 our state universities and definitely the national level

1 as well. And to, you know, point out the difference,
2 this was the second largest category. There was only
3 one deal over a hundred million dollars in this domain
4 in the top 10 deals done last year. And No. 10 was at
5 31 million, which is still a large, you know, nice
6 mezzanine round, but it's a much more rational number
7 than what we saw in solar.

8 Next category is energy storage. This would be
9 batteries and fuel cells and stuff like that. There is
10 a migration going on from fuel cells, which was the
11 focus a few years back now to advance battery
12 technologies. In particular, lithium ion batteries are
13 dominating. This category was much smaller as the third
14 highest category compared to the previous two. So even
15 though one particular technology is dominating, which is
16 lithium ion, you can see that the other subcategories in
17 this particular field are still very small.

18 Wind. Wind is rebounding, however, the -- there
19 has been a kind of a transition. In the early days of
20 the focus on wind, there was a lot of investment, large
21 investment, in wind farms because there was already wind
22 turbine technology out there that worked and continues
23 to be a steadfast, you know, solution for harvesting the
24 wind power, so -- but those dollars are drying up, at
25 least with respect to venture capital. That does not

1 mean that the larger energy companies are not investing
2 in this. It just means VC's have considered it a mature
3 technology and, of course, they focus on innovation. So
4 instead, with respect to wind, the focus is very much on
5 technologies that can optimize in a subcomponent type of
6 fashion within those larger turbines and other types of
7 harvesting technologies. So wind is a very young
8 category. Again, the biggest deal was very large, but
9 that was, you know, working on a large generator. But
10 the -- No. 10 was only an 8 million dollar deal. That's
11 an early stage VC type of a round. So very young
12 categories. If anybody knows of any wind technologies
13 going on that are, you know, components that can value
14 add into the large farms or be sublicensed into the
15 larger companies, this is where we should focus.

16 Okay. Welcome aboard, Obama. He, before he even
17 started, has been campaigning and articulating that he's
18 already putting initiatives or has intent to put
19 initiatives together for green building certification,
20 lead certification, and what not. That is a -- Jim
21 Fenton from FSEC is here and he's going to talk for half
22 an hour as our keynote here today, and this is a
23 particularly strong area for the Florida Solar Energy
24 Center, which is a UCF research center. So this is good
25 for our region for a lot of reasons. First of all, it's

1 a great way for local governments to do incentives, but
2 also it's an area that we have some domain expertise
3 that we might want to focus on.

4 Water is actually a personal favorite of mine
5 because if I had to hedge my bets and if I decided to
6 start an early stage company tomorrow, I would probably
7 bet on water because it has all the criteria for
8 somebody trying to, you know, start something, because
9 you always have to be ahead of the curve and you have
10 to, you know, kind of look ahead and see where the
11 problem's going to be. And water is going to be a very
12 scarce resource somewhere in the next decade, and when
13 that happens, trust me, the world will begin to panic
14 and people will start paying top dollars for
15 technologies that can optimize water. So it's very
16 young today, very kind of hypothetical out there in the
17 VC world. The VC's tend to not invest in this stuff.
18 But things like memory technology, decelination
19 optimization, you know, pollution control, that kind of
20 stuff, I think, is critical.

21 Okay. So I'm going to switch gears for a quick
22 second and just chat about venture capital. No
23 surprise. We don't have a lot of venture capital in
24 Florida, especially early stage. Everybody that knows
25 me knows this is my particular pet peave. And, once

1 again, the numbers, you know, are pointing this out.
2 This is a listing of all the VC's that invested in those
3 top 10 deals of each of the different categories. Not a
4 single one of them is anywhere near Florida. Most of
5 them are all in California, as you might imagine, but,
6 you know, Austin, Boston, all the usual areas. And, as
7 John pointed out, California, Austin and Boston also
8 happen to be the areas where Cleantech is a core
9 foundation of their economies. So there's a direct link
10 in my opinion of venture capital early stage companies
11 and the maturation of these types of economies. So,
12 once again, we need to pay attention to not just do we
13 have the right technologies and the right people, but do
14 we have the capital to fund these companies and get them
15 started, which, frankly, right now, we don't.

16 So just to wrap up, as I already mentioned, green
17 buildings is on the queue as a potential hot topic for
18 next year. There's a lot of government focus on it as
19 well, so a good place to potentially focus on. The
20 other areas are grid -- smart grid technologies. So
21 anything that can optimize, you know, our grid, which,
22 by the way, is one of the poorest run grids in the
23 entire planet. Pretty sad. Part of that is because we
24 were one of the first ones to implement one; therefore,
25 we're dealing with data technology. So there's a lot of

1 focus on how to get that up to the standards that the
2 rest of the world is already on.

3 And I guess that's it. So I only had 10 minutes
4 and I think I also went over. So, once again, we're --

5 MR. LEWIS: Any questions of Kirstie?

6 MS. CHADWICK: Any questions? Not that I have the
7 answers, but I'll do my best.

8 Cool. We'll keep it on time.

9 Now, I'm going to switch over and be the MC.
10 That's my other function today. Next up is Sean Snaith
11 with the Institute for Economic Competitive- --

12 MR. SNAITH: Competitiveness. It happens to
13 everybody.

14 MS. CHADWICK: Sean and his people are the folks
15 that are spearheading the studies that John was
16 referring to, so him and his team are going to spend the
17 next 20, 30 minutes chatting about that. One of the key
18 things we need from you and one of the core missions of
19 this series is input from you. We spend a lot of time
20 up here rattling on, and we potentially will today, but,
21 please, if you have input that you would like to share,
22 the best thing you can do is engage with Sean and his
23 group because the whole reason we're doing this is to
24 let people know about this study so we can get your
25 input into it.

1 With that, back to Sean Snaith.

2 MR. SNAITH: Thank you. Good morning, everybody.
3 Appreciate you being here, certainly in some challenging
4 times economically and in terms of financial markets,
5 and I think that makes the efforts of the symposium in
6 this study all the more important. Markets can be a
7 cruel teacher, and I think we've all had some lessons in
8 diversification lately, both in terms of your
9 portfolios, but also in terms of the economy, and what's
10 developed out around the UCF medical school and the pace
11 with which that's occurred is an important advance, and
12 it's helped ease the impact of the recession here in the
13 Orlando Metro area. And I think it's the region's
14 really unique affinity for partnerships that was behind
15 the pace with which those developments occurred, and I
16 think that's going to be a big part of what drives this
17 Cleantech initiative as well. It's government, it's
18 education, and it's the private sector working together
19 to come forward with a plan in a very, you know,
20 challenging environment. Not just the funding side of
21 things, but what's happened in energy markets. You
22 know, the Cleantech initiative and sectors impacted when
23 oil goes from \$147 a barrel down to below 40, and we
24 have to be able to adapt to those changes. So we look
25 forward to working with you all as we transition in

1 these next symposiums to a more interactive, more
2 feedback, more of that partnership working to shape the
3 final project.

4 I've been awful busy with the way the economy's
5 been lately, and, heck, just trying to keep track of the
6 tarp plan, what they're doing with that from one day to
7 the next occupies a good share of time. So I was
8 speaking with John about bringing someone on to help
9 manage this Cleantech project, because it really needs
10 someone to focus on it, and I think it went from our
11 lips to God's ear because within a day a resume came
12 across my desk, and this person, Marielle Granjean -- my
13 French is not so good -- she's taking over as the
14 project manager for this Cleantech study and the
15 institute and she's got 15 years of professional
16 experience in policy analysis and project management.
17 She's got a bachelor's degree from NYU in economics,
18 she's got a master's degree in public administration
19 from the Kennedy School of Government, Harvard
20 University. She has worked for the United Nations, a
21 Democratic Republic of Congo, and in the Central African
22 Republic, and so both John and I agreed she's probably
23 well hardened to deal with county government. And
24 without any further adieu, I'd like to introduce
25 Marielle who will give you an overview of our study.

1 MS. GRANJEAN: Good morning. Before I start, I
2 just would like to inform you that the presentation
3 today will not be about any -- this presentation will
4 not provide any specific data or details that will be
5 included in the report, so our job today will be to map
6 out the process, to let you know about what we intend to
7 do and what will be in the report and how we're planning
8 to get there.

9 First, it's very important from the center complex
10 to assert itself. As for any major development agenda,
11 we have to start from where we are. As you understand,
12 there's a growing demand for cleaner products and
13 services. For the past couple of decades due to growing
14 awareness of climate change and developmental
15 challenges, consumers and businesses have been demanding
16 cleaner products that not only reduce pollution but also
17 reduce cost and use less resources.

18 Secondly, we have to take into account the economy
19 growth opportunities that exist with this. You know, as
20 there's a new economy that is emerging out of this. You
21 know, as we are trying to address the environmental
22 challenges, we understand that Cleantech provides great
23 tremendous opportunity for economic growth, not only for
24 companies, but also for cities, states, and countries.
25 The GE chairman, Jeffery Immelt, himself, he says that

1 green is green. Since then, this has been very popular.
2 This is a recognition that environmental thinking is
3 more than just an ability, because, as you understand, I
4 don't know who it was at the previous symposium that
5 talked about the fact that green is better -- clean is
6 better than green because it -- clean provides this
7 economic aspect that was inexistent in green technology.
8 Also -- so Cleantech has fostered economic growth
9 through innovation, new market and business
10 opportunities. And there is outside opportunity for
11 competitiveness and I will say Cleantech clusters.

12 Cleantech promises to be the next industrial
13 revolution. As such, Cleantech is at center stage in
14 all major government and recess institutions' agendas.
15 Cities, states and regions all over the world are
16 fighting and they are competing to make their cities the
17 new hubs of science and technology. To repeat, Michael
18 Porter was a guru in economy competitiveness, a schooler
19 from Harvard Business School, and he argues in his book,
20 1998 book, Clusters and Competition, he said that
21 clusters are the ingredient necessary for any regional
22 community development.

23 All right. So it is in that context that the
24 leadership of Orange County has decided to launch
25 Cleantech as one of the major part of the economic

1 agenda for the next decades.

2 What is the purpose of the study? You know, it's
3 three-fold. First of all, it will serve as a useful
4 tool for all connect. This is general, for all connect
5 quarters in the region. We're talking about you, all
6 individuals, all of you who are here today, you know,
7 groups or entities with a direct investment, involvement
8 or interest to invest in clean technologies. And also
9 it will serve as a source of data for companies who
10 decide to invest in clean technologies. It will offer
11 them a comprehensive blueprint to take advantage of this
12 new economy and new vision. In turn, it will serve as a
13 stepping stone toward future economic development for
14 Metro Orlando, and this is what Mr. Lewis was talking
15 about. This is very, very important for them because
16 the study will provide them as the key input information
17 base for any new leadership agenda for Cleantech as the
18 driver for future wealth, creation and prosperity in the
19 region.

20 The study methodology. The institute will use a
21 very comprehensive research methodology that will
22 include not only primary and secondary research, but we
23 also are doing a survey. For instance, we will use --
24 okay. As sources, we will use existing Cleantech study
25 reports and books. I don't know -- in the disks that we

1 received from the -- from Mr. Lewis, he has done a lot
2 of research. You can see they have very, very great
3 books as far as the Cleantech revolution, which is a
4 great one that just came out and revised here. And,
5 also, we have ministers that we have talked about from
6 California. We have many, many great reports being done
7 all over the countries, not only in the United States,
8 but also overseas.

9 And, secondly, we intend to use information from
10 major companies and networks like Cleantech Group, LLC,
11 the Cleantech Network, and also from Clean Edge, Ernst
12 and Young. Their websites are full of information that
13 are being updated on a daily basis. And, also, we will
14 use the research institute, science and business
15 journals, newspapers and periodicals. And, finally, we
16 intend to conduct interviews with Cleantech experts.
17 Also, in the case of this region, we're planning to have
18 a survey with major companies who are involved in
19 Cleantech here in the Metro Orlando area.

20 So we are counting on your input in this process,
21 and we think that, you know, everybody will benefit out
22 of it. And, you know, as we said before, the symposium
23 series definitely will play a major role in this process
24 and we thank you in advance for your cooperation.

25 The timetable. The study will be implemented in

1 different phases. We have the research implementation
2 that's been going on since the beginning and up to
3 March, and the survey implementation, we just started it
4 and we intend to finalize it this week and kick it in,
5 you know, starting next week. We're going to start
6 contacting all major companies around here and we are
7 asking every single company or individual who wants to
8 be contacted, please, after the symposium, you know,
9 give her your coordinates. We would be more than happy
10 to get an interview later. Also, the report and study
11 outcome itself will be coming in March and we will share
12 it with Orange County, and hopefully in April, we'll
13 make a final presentation of the report data collection.

14 First of all, there's a combination of factors that
15 will guide us -- you know, guide the type and scope of
16 this study. First of all, we have to take into account
17 the will and the wishes of Orange County and also the
18 key uses of the companies, the government
19 responsibilities, and that will be the assessment of any
20 state or local policies and programs. And, finally, we
21 understand there is research to be done from all private
22 decision makers in Cleantech issues.

23 So the first type of information that will be in
24 the study, first of all, we have to start with Cleantech
25 as a new technology revolution. As you understand, as I

1 talked about it earlier, the book from Pernick and
2 Wilder, they are two gurus in Cleantech from Clean Edge.
3 They came out with this great, great book, and it's --
4 Cleantech is a new technology. And we also are going to
5 talk about all the global trends and statistics. As we
6 just saw here, there are many coming from different
7 parts of the world and different sources, and we make
8 sure we get you the most updated information. In terms
9 of -- also, we will talk about the main drivers. In
10 their book, Cleantech Revolution, these two authors
11 mentioned six main drivers of Cleantech that they call
12 sixes. It's caused capital competition, China, climate
13 and consumers. So we will layout -- you know, briefly
14 on each of them, we will explain why we believe that
15 these six components are really driving Cleantech.

16 And also we will talk about Cleantech as an engine
17 of growth because we cannot talk about Cleantech without
18 talking about how it's bringing jobs and how it's
19 creating economic growth in the region. So this is
20 very, very important. And also Cleantech jobs, green
21 jobs, will be a major part of it.

22 We also intend to talk about each major
23 technological sector or industry. First, solar energy,
24 wind power, biofuels and biomaterials, green buildings,
25 personal transportation, utilities or smart grid, water

1 and mobile technologies. And what will be researched in
2 each particular industry, in each of them, we want to
3 talk about why it matters, why we need to talk about it,
4 and also we talk about the overall trends and the
5 challenges and opportunities that also exist, and we
6 also talk about all the related Cleantech jobs and the
7 major players. Here, we will try to introduce also the
8 players in the region because this is how people can
9 show more interest, because if they know in the region
10 that something is starting already, so definitely it
11 will help us out.

12 Cleantech clusters. As I said, Cleantech clusters
13 are very, very important, so our intention will be to
14 talk about all the existing clusters all over the
15 country, talk about the initiatives that have been
16 taking place, and, you know, again, talk about clusters
17 and economic growth. And also we want to give some
18 success stories. We're thinking about California as a
19 state, because within California there are many clusters
20 and we want to explain why -- you know, based on our
21 research why we think they have been so successful. And
22 then we're going to talk heavily about Metro Orlando.
23 We're going to talk about all the assets. You know, why
24 we think Metro Orlando can be the future -- one of the
25 future leaders in Cleantech. We will talk about the

1 natural resources of Florida, we'll talk about all those
2 organizations that are supporting Cleantech, the
3 Cleantech industry here, and also all the organizations
4 that have been engaged in making Cleantech a success,
5 because we believe that partnerships are one key to any
6 economic development success. So we talk about all the
7 partnerships that exist already, like this series that
8 is taking place here between the University and Orange
9 County. We will also talk about all regional
10 initiatives that are already existing. In terms of
11 market analysis, we will also -- we will list all the
12 major companies that are here and, you know, any
13 companies that -- again, before you leave, please
14 provide us with your information. We will contact you
15 to get further information for the survey, because the
16 purpose of this study is basically, you know, the survey
17 is very -- would be a very important part of it, because
18 so far we're just talking about, you know, all the
19 details that exist out there, but unless we know for
20 sure how companies that are investing or want to invest
21 in Cleantech, how they feel about it, how, you know,
22 they've been performing so far, if they have been
23 successful, or maybe some have failed. So we want to
24 know all about that and make it part of our
25 recommendations.

1 Next, you know, for the survey, the reason for the
2 survey will be laid out in detail. We talk about all
3 the opportunities and challenges that exist, and we also
4 talk about potential for growth, and before we talk
5 about the potential for growth, we have to know all the
6 assets, you know, what -- we have to know if there any
7 investments -- you know, investors here. You know, we
8 saw in here that these are existing and we want to know
9 about those who want to invest and we want to know about
10 those who have failed, as I said earlier, and we want to
11 know about all the major industries. We will also
12 provide an action plan with specific details for the for
13 the -- for Orange County because it's good for them to
14 have specific -- you know, specific recommendations. So
15 this is what we're going to do.

16 And, finally, in the last, we want to emphasize in
17 the role of symposium here we are asking every single
18 one of you to collaborate with us, to give us all your
19 valuable insights, because it will be a valuable part of
20 the study.

21 Thank you very much.

22 UNKNOWN SPEAKER: Could you put your phone number
23 back up, please?

24 MS. CHADWICK: I'll do it.

25 I would like to reiterate what Marielle already

1 mentioned, which is the role of all of you in this
2 particular study that she's responsible for putting
3 together for all of us. So in -- we haven't ironed out
4 all the details yet, but in the next series 1 to 2 of
5 these particular sessions, it's going to change from a
6 passive format, which we're in right now where you hear
7 from all of us, to an interactive format. And so that
8 means we might be asking for you guys to actually
9 provide some legitimate data based on your particular
10 companies or your opinions or what not. So heads up.
11 And so, please, keep coming, because start -- probably
12 starting in the next one, we're going to transition into
13 that format, and your input is invaluable.

14 With that, I'm going to turn the podium over to Jim
15 Fenton. This is the guy with the tie. If you haven't
16 -- he came in a tad late, so you may not have seen this,
17 but it's probably in the introduction here. Jim is the
18 director of the UCF Florida Solar Energy Center, which
19 is over in the Titusville, Cocoa Beach area. He's been
20 in that role since January of '05. He leads a staff of
21 140 folks in the research and development of energy
22 technologies that are enhancing Florida's and the
23 nation's economy, the environment, and it's focusing
24 also on educating the public, students, and
25 practitioners on the results of their research.

1 In addition to his duties as the director of FSEC,
2 he leads a 12 member university and industry research
3 team and a 19 million dollar Department of Energy
4 research program to develop the next generation proton
5 exchange membrane. That's in the fuel cell engine
6 domain. I don't want to get into the batteries.

7 Prior to joining FSEC, he spent 20 years as a
8 chemical engineer and professor at the University of
9 Connecticut. His research activities in fuel cells,
10 pollution prevention and sustainable energy are helping
11 FSEC expand its nationally acclaimed research and
12 education programs in hydrogen, alternative fuels, solar
13 energy and buildings' energy efficiency. He's the
14 author of more than 120 scientific publications and a
15 number of book chapters, and he holds three patents.

16 With that, Dr. Jim Fenton. Thank you.

17 DR. FENTON: Let's see, new Bill Gates products.
18 So thank you for that introduction, Kirstie.

19 I'm here to sort of talk today about opportunities.
20 I'm going to give you some history as we move through
21 this as well. The Florida Solar Energy Center was
22 founded back in our first energy crisis. This was in
23 the 1970's. At that time, we were concerned about the
24 fact that we were importing a reasonable amount of oil.
25 We're importing a lot more oil than we did back then.

1 And, as a result, there was an oil embargo and we
2 implemented at that time automobile CAFE standards.
3 That was when we implemented automobile CAFE standards.
4 Today, we are about 23 miles per gallon average
5 automobile now. The interesting thing since that period
6 of time is the automobile has gone up -- the average
7 automobile has gone up 800 pounds and it's doubled in
8 its horsepower; i.e., we're all driving pickup trucks.
9 Now, as you know, the price of fuel and everything else
10 like that has changed. Some of the dynamics are
11 changing. The interesting thing, though, is if you want
12 to look at things like energy, we tend to get focused on
13 the manufacture of energy, the production of energy.
14 I'm going to try to get you more focused on the
15 efficient use of it. The best energy is one you don't
16 use. Okay? So efficiency really is where we should be
17 looking at. It's not quite as sexy as you might think.
18 That's where we need to go. Then, of course, I'd like
19 to -- being in Florida Solar Energy Center -- move
20 towards energy generation from a real perspective, but
21 I'll always tell you to go with efficiency first. And
22 usually that's the most cost effective thing to do as
23 well.

24 Okay. I've listed the program areas we have.
25 Kirstie mentioned that we have 140 employees. I'd like

1 to put this in a perspective the business world loves.
2 I have an 8 million dollar payroll. State gives me 2
3 and a half million dollars. Most of my employees are on
4 soft money. They don't win DOE department grants,
5 they're unemployed. Simple. Okay? We're good at what
6 we do; all right, because of that reason.

7 Solar, of course, is our name and we were founded,
8 as I said, 30 years ago. And at that time, we were
9 founded to test and certify all solar hot water heaters
10 sold in the state of Florida. This would be safe for
11 domestic hot water generation, right, as well as a solar
12 pool hot water heater. All right. And we still carry
13 out that mission. We actually test and certify all
14 solar hot water sales in the whole United States. We do
15 that via a national program. In Florida, if you buy a
16 solar hot water heater, it will have an FSEC stamp on
17 it.

18 We've grown into the photovoltaics area as well. I
19 have about 10 people on the professional side in solar
20 hot water, 10 people in the photovoltaic area. We test
21 and certify all PV sold in the state of Florida as well
22 as all the systems that are sold in the state of
23 Florida.

24 Now, my biggest group is the buildings area. We
25 have 40 professionals in high performance buildings.

1 We're the only university at UCF that leads a DOE
2 sponsored Building America program. I didn't even know
3 UCF existed five years ago. I'm sure you've been told
4 by now that we're the sixth largest university in the
5 United States. So we're a well kept secret. Florida
6 Solar Energy Center and its activities are a relatively
7 well kept secret as well. So of these 40 employees
8 working on performance buildings, I have two architects
9 working full time on Habitat for Humanity homes
10 throughout the whole United States. I'm making those
11 homes energy efficient. Okay. So our least expensive
12 homes we can make energy efficient. This isn't just for
13 the wealthy. All right. In the photovoltaic area,
14 we're one of two universities that lead photovoltaic
15 applications throughout the whole United States. We
16 have a nice resource at the Florida Solar Energy Center.

17 The testing and certification in the solar thermal
18 area continues today. In the hydrogen alternative fuels
19 and fuel cell area, I have 20 employees tied into that.
20 We actually run a DOE program, so I actually wear a
21 Department of Energy hat, and the membrane will be used
22 in our automobile fuel cells in the future. So we have
23 that activity going on. Then we also have about five
24 people in the K through 12 education arena. We do a lot
25 of training. We run a banner center on behalf of work

1 force in Florida on the training of photovoltaic
2 installers. Okay. This is being done in conjunction
3 with about 10 community colleges and so forth. So I
4 think you are going to find that the opportunities in
5 the alternative energy areas are rising in efficiency as
6 well in that. The opportunities are in the jobs, and I
7 will get into that a little bit later on, and then the
8 demonstrations of these technologies, of course, are
9 important.

10 Let me give you a background. We've used the word,
11 markets, okay, and a lot of the cases alternative energy
12 is always going to be alternative until it's cheaper.
13 Okay? So when we want to talk about solar, wind,
14 biofuels, and some things like this, you have to put
15 this in perspective as to what the current technology is
16 costing everybody. Now, everybody in this room knows
17 the price of a gallon of gasoline. Everybody in this
18 room probably knows where the cheapest gasoline is. How
19 many times did you drive by a price sign today on the
20 way to this symposium? It's a marketing marvel the fact
21 that gasoline -- you're bombarded with the price of
22 gasoline. Occasionally you might go by a liquor store
23 and see a price of Budweiser. Other than that, the
24 price of gasoline bombards you all over the place. Most
25 Americans don't know the price of electricity, nor do

1 they even know what the units are. As Kirstie pointed
2 out to you, a gallon of gasoline has no energy merits
3 with it. It's just a volume. And, yes, ethanol has
4 less energy per volume than gasoline does per miles per
5 gallon. So your miles per hour will go down, but you
6 pay for it based on gallons. Electricity is actually
7 paid for using energy units. It's a kilowatt hour. As
8 you can see from this slide I've got here, it may be
9 difficult to see the prices, but Florida down there in
10 the lower right is at 11.2 cents a kilowatt hour. We
11 can call that 12 cents if you want. You can see on the
12 top above the map here -- do I have a pointer up here?
13 Okay. If you look above the map there, you can see that
14 the United States in 2007 had an average price of 10.64
15 cents. Now, I'd like you to look at the states that
16 surround Florida. They're all cheaper. Okay? I'd like
17 you to look at West Virginia. West Virginia is probably
18 somewhere around 6.6 cents. Then let's go over and look
19 at Utah. Okay? That's 8.17 cents. Okay? So when
20 people talk about it's going to cost too much doing all
21 this kind of stuff, you are already paying for it,
22 folks. The state of Florida made a decision that we
23 wanted to use cleaner burning natural gas to provide our
24 electricity. Okay? So you pay more than those southern
25 states that are just above us to the north. They're

1 paying less. They're burning more coal. Utah burns
2 exclusively coal. Now, if you look up at Washington and
3 Oregon, yeah, cheap hydroelectric. Okay? You look at
4 Texas, 12.41 cents. You look at the state that I came
5 from, most expensive outside of Hawaii on here, 18.6
6 cents. Okay. West Virginia, which isn't too far away,
7 is paying less than half for the cost of electricity.
8 So where do you suppose the markets for alternative
9 technologies are in the states that already have the
10 cheapest electricity around? I.e., it isn't broken, why
11 do we have to fix it. So I can explain why the Boston
12 area has all the Clean technology areas. I can explain
13 why California does. San Diego, which was mentioned
14 earlier, has time of use rate electricity. This is
15 where you pay for electricity as a function of time,
16 because, as you might expect, at around 2 o'clock, say,
17 in Florida, that's when everybody's got all their air
18 conditioners turned on and we're making electricity.
19 Well, the utilities have to provide us with electricity.
20 Okay? Right. They turn on their most expensive power
21 generators around 2 o'clock. They hope to turn them off
22 as fast as they probably can. Well, time of use rate in
23 San Diego is 32 cents a kilowatt. 32 cents. That's
24 their time of use rate. I.e., we're paying a fortune
25 for electricity. We'd better do something about it.

1 Now, when I'm talking about alternative energy
2 technologies, alternatives won't be alternatives when
3 they're cheaper. Now, I didn't make the map here, but I
4 have the map, and if there is an opportunity later, I
5 can put it back up, that actually shows renewable energy
6 portfolio standards, okay, for different states, and
7 they're colored in green, and you can imagine that those
8 people that are paying the most for electricity tend to
9 have far more renewable energy going on than people that
10 have less. It has nothing to do with your resources.
11 Now, Utah is blessed. So is West Virginia, depending
12 how you look at it, in that the coal they burn is their
13 coal. So you might argue environmentally maybe that's
14 not the right thing to do, but they purchase their own
15 coal. So when they pay for electricity, all the money
16 stays home. Florida spends 55 billion dollars a year on
17 fossil fuels. This is our transportation fuels, this is
18 our coal, this is our natural gas to make electricity,
19 and so forth. 55 billion dollars a year. Ballpark,
20 half of that leaves the state. Think about that.
21 That's a lot of money. I think the economists in the
22 crowd will tell me that, yeah, roughly, if you keep the
23 money here, it actually develops, what, two to three
24 times the value of the actual dollars you keep here. So
25 roughly 55 billion, 27 billion is money that we ship out

1 of the state. Multiply by 2 to 3, that's a lot of
2 money. So it is important that we're clean, okay? I'm
3 more concerned about keeping the wealth here. Now, if
4 you don't use energy at all, even if it's Florida's
5 wonderful sun or biomass, okay, you keep the wealth
6 here, too, because what are you doing? You're making an
7 up front capital purchase. You own it. It's yours. So
8 if the value goes up, you keep it. When you buy energy,
9 you just consume it. It just -- it's gone. All right.
10 Some things to think about. The interesting thing then
11 here is that if you look at cost of electricity I've got
12 on this map, you can see here that Connecticut is up
13 there at 18.6 cents. Okay. So you know if the cost of
14 photovoltaics on your roof top is less than 18.6 cents,
15 okay, without subsidies or anything else like that
16 you're putting in, okay. So the sunshine state, as an
17 example, loses to the garden state like you wouldn't
18 believe. It's cheaper to put PV on your roof, okay, in
19 New Jersey, okay, today. The state of New Jersey has a
20 portfolio stamp. By the way, the public service
21 commission here in the state of Florida just announced
22 that it agreed with the governor that we will have a 20
23 percent RPS by the year 2020. Hopefully, the state
24 Congress will pass that. So our goal here in Florida is
25 to have a 20 percent renewable. Many of these other

1 states that have these renewable portfolio standards
2 also have what we call a public benefit fund. Okay?
3 You could argue it's a tax. Yes, it's a tax on your
4 electric bill that helps offset the cost. It provides
5 subsidy. Let me give you an example with the state of
6 California. The state of California spends 550 million
7 dollars a year on rebates to its citizens to buy down
8 the cost of photovoltaics or solar thermal hot water on
9 their roofs. 550 million. Now, California has twice
10 the population the state of Florida does, so if we want
11 a million solar roofs like California, this is easy.
12 Just come up with two 275 million bucks a year. That's
13 \$1.50 a month on your electric bill. That's what that
14 cost is. So I'm going to take away a beer from every
15 one of you once a month, and if you're smart, you steal
16 your wife's. Okay? That's what it comes down to. Now,
17 we were told, of course, that \$1.50 a month was too much
18 money. Many of you who are in Progress Energy territory
19 or in Florida Power and Light territory, you are going
20 to be paying 6 to \$9 a month to purchase a nuclear power
21 plant which won't turn on for 10 years. Okay? I'm not
22 saying those are good or bad things, but if Florida
23 wants to have a market and generate opportunities here
24 in the state, we've gone forward. We're coming up with
25 20 percent renewable portfolio standard. We have to

1 have a public benefit fund on the money. That's what
2 will drive these markets. The cost of electricity has a
3 bearing. As it turns out, at a 5 percent inflation rate
4 -- by the way, that's very conservative, though it's
5 hard to say what's gone on the last six months as to
6 what the prices of energy are -- but roughly at a 5
7 percent inflation rate, the nation's average in 2015
8 will be 16 cents a kilowatt. In 2015, okay, the cost of
9 photovoltaics on your roof without subsidies will be 16
10 cents a kilowatt hour. So who would have dreamed that I
11 would have told you that in 2015, photovoltaics will be
12 cheaper than electricity out of the wall. That's where
13 we're going. The opportunities are there.

14 I did want to sell more of you of the efficiency
15 thing, and the interesting thing about efficiency is
16 let's look at where the sales of electricity occurred
17 throughout the United States, and then let's look where
18 they occurred in Florida. And you can see here that in
19 Florida, okay, 51 percent of the electricity is used in
20 your home. So if I could magically make every single
21 one of your homes a zero energy home, how would we do
22 that. We'd put a lot of money into your home. Make it
23 more energy efficient. You get to keep the wealth. Or
24 we could take money, invest in a big power plant. So
25 you can own a tax payer power plant or you can own a

1 more valuable house. Okay? And guess what? We keep
2 all the money in the state of Florida. It's simple.
3 Every house in the state of Florida should be a zero
4 energy home. Just to give you a flavor, Florida Power
5 and Light generates 50 percent of all electricity in the
6 state of Florida. 51 percent of the electricity is all
7 used in your home. Guess what, you don't have to pay
8 the bills. Make some upfront capital investments.
9 Okay? Roughly, we can go ahead and improve our homes by
10 30 percent at a levelized cost of about 5 cents a
11 kilowatt hour. Remember, you're already paying 11.2 out
12 of the wall. So this is just an issue about financing.
13 okay? If you think about it this way, almost all of you
14 have a mortgage. Okay? Now, the interesting thing is
15 when we talk about energy efficiency, everybody comes to
16 me, what's the payback, what's the payback. When you
17 put that granite countertop in your kitchen, did you ask
18 what the payback was? When you upped up for leather
19 seats, did you ask what the payback was? Do you
20 remember when TV was free? You are all paying 60 bucks
21 a month for TV now, aren't you? I can't get a buck, 50
22 out of you to go ahead and put PV panels all over your
23 roof. Think about it. It's crazy what we're doing.
24 Okay? The key here is that right now in Florida
25 typically we were building about 190,000 homes a year.

1 Okay? Dropped down substantially on that. Okay? And
2 we were all building them to the minimum code. What's
3 that mean? A barely legal building. Okay? That's what
4 it really means. All right? Furthermore, a builder
5 builds you a building, gives you the biggest square foot
6 you want. The builder doesn't operate it, you do. So
7 you want to operate your building more energy
8 efficiently. And, see, I think that's where the
9 opportunities are. That's where the real growths are is
10 in the efficiency area and the markets for that.

11 Okay. Let's talk about this American home. In
12 Florida, by the way, we have 8 million homes. Okay? As
13 I said, we can do about a 30 percent average efficiency
14 on all these things and drive those down. We run into
15 troubles with the paybacks, okay? But if you can
16 imagine, if we had a scheme where somebody would come
17 into your house, okay, do an energy efficiency measure
18 with it, all right, come up with all the cost effective
19 things. Basically give a loan to your power meter,
20 okay? And if the loan -- say it's a 30 year loan to the
21 meter. It's not to you, it's to the meter, okay? The
22 state of Florida owns the house, okay? You're just an
23 occupant, okay? Why do I say that? If you look down
24 here at the punch line on this particular slide, in the
25 year 2050, two-thirds of all buildings already exist

1 today. So, yes, I want to build new stuff more
2 efficient, but we've got to go in and retrofit our
3 existing buildings and our existing homes. Okay? Now,
4 you come back to me, what's the payback? Six years?
5 That's too long. Eight years? That's too long. Well,
6 magically if I give you a 30 year mortgage to the meter,
7 okay, and the pay back is less than 30 years, okay, your
8 first month, you win because your cost of your
9 electricity will go down, okay? Yes, your principal and
10 interest will go up, but your cost of electricity will
11 go down. And if it's a 30 year mortgage, you financed
12 it over 30 years, and the payback is less than 30 years,
13 your first month you made money on the deal. And you're
14 not paying for fossil fuels and you're keeping all the
15 wealth in the state of Florida. This is easy. It's all
16 about financing, okay, and desire.

17 Now, we've got to provide incentives to get people
18 moving, but you can see here then that buildings use
19 quite a bit of our primary energy use as well. In
20 Florida, the bulk of that is electricity. Of course, we
21 have heating issues and things like that in the
22 northeast. I'll give you a flavor of it. This is a
23 plot of the per capita electricity use. And if you paid
24 attention to our new Department of Secretary of Energy's
25 presentations -- I've been using this plot longer than

1 he has, okay, but he uses this same plot -- but I'm
2 going to give you a Florida flavor to it. I've added
3 the state of Florida onto this plot as well. As you can
4 see, the electricity used per person in the '60's up to
5 the oil embargo in 1973, pretty much the whole nation
6 was moving at a slope. After the Arab oil embargo, we
7 slowed down, but California went flat. They actually
8 went flat. Now, there's this misnomer that you got to
9 use a lot of energy to generate economic wealth and some
10 things like this. Well, California has proved that's
11 not true. Their productivity and so forth is very good,
12 but the electricity per person has gone flat. Now,
13 let's slide all the way out to give you an economic
14 context of what that means in Florida. Okay? Today, if
15 we use 12 cents a kilowatt hour, that's 5,000 kilowatt
16 hours a year per person. Okay? That's what the
17 difference is between that sort of purple dot and the
18 yellow dot. All right. So then 5,000 times 12 cents is
19 \$600. We have 18 million people in Florida. We spend
20 10 billion dollars a year extra on electricity than a
21 person in California because our houses are built of
22 crap and they've gone ahead and implemented good
23 buildings. It's simple. Okay? We can fix this stuff.
24 Okay? Lot of opportunities there.

25 Okay. Now, let's talk about energy as far as

1 transportation goes. Think about it. You're enamored
2 with liquid fuel. That's what it's all about.
3 Magically you think you have to have liquid fuel in your
4 car. Okay. Personally, I think every car in the future
5 is going to be electric. Okay? Furthermore, why do you
6 have to have the engine in the car in the first place?
7 Why not just electrify all the highways. Okay? By the
8 way, the real estate savings would pay for it alone. If
9 you think about it, if you're driving on a big huge
10 freeway, and albeit, right before I got here today, I
11 was moving very slow, but if you could drive 70 miles an
12 hour, okay, you're supposed to have a car length for
13 every 10 miles an hour you go. So that means if you're
14 going 70 miles an hour, there is room for seven cars
15 between you and the car in front of you. That's because
16 you need the stopping distance, everything else like
17 that. So if you could magically rack and pack all these
18 cars, put them in a single lane, I go from seven lanes
19 down to one lane. If you've electrified them, I don't
20 have car accidents because I've saved all that and done
21 all this. That's a lot of real estate. Might pay for
22 it all. This is a picture of an oil tanker going into
23 hurricane Isabella. By the way, it turned, the
24 hurricane. They were able to turn the hurricane. But
25 in a way, this is kind of the situation, if you want to

1 think about it, that we're getting ourselves into.

2 Now, I'm a firm believer in climate change, and
3 climate change is very important, and I believe that the
4 climate change issue is also one that's very concerned
5 that we have. I happen to live 5.72 feet above sea
6 level. It's amazing to me that they actually get that
7 to the decimal point. So, obviously, as far as that's
8 concerned, I've been inundated with the water. It's not
9 exactly the greatest thing in the world. Keep in mind,
10 as the sea level rises a meter, Florida's just sand.
11 Our aquifers, our sources of water, okay, will be
12 impregnated by sea water. Just sort of goes right to
13 it. We're not even talking about that problem. So I do
14 agree water is a big one. Now, the other interesting
15 thing is, how do you clean water up? You put a lot of
16 energy in. Oops, we buy that from somewhere else, too.
17 So these are some interesting things to think about.

18 Personally, peak oil is where the problem really
19 is. Now, I put this plot here for you. This is a plot
20 of the annual oil production and billions of barrels as
21 a function of time. Now, I chose this particular peak
22 oil plot for two reasons. One, it was published in
23 1998. Okay? And, two the peak was in 2005. Now, I'll
24 explain to you about what this means. So this actually
25 shows then, if you look along this sort of orange jagged

1 line here, as times goes on from the '30's into the
2 '80's, you can see the oil embargo in '73, we actually
3 went down. We started using less oil. There is a lot
4 of argument about peak oil as to exactly when the peak
5 will occur. Okay. Everybody agrees that they know the
6 amount of total oil we have on the planet. The argument
7 is how efficiently can you get it out, at what cost can
8 you get it out, and how much can you get it out. That's
9 where all the disagreements are. But I chose this peak
10 here because it was in 2005. Now, what we failed to do
11 in 1998 was to think about China and India. Okay. That
12 was into the long hair. So actually put a star up there
13 for the actual 2005 energy use. Okay. Which is
14 substantially above where the peak was before. So if
15 you were to redraw this supply curve, if you will, on
16 here, sort of keeping the area under the curve kind of
17 conserved, we can argue about it. So when our -- I
18 guess officially our former president announced three
19 years ago that a child born today will be driving a
20 hydrogen powered car -- and, by the way, since I work on
21 fuel cells, I hope we do make those investments and we
22 pull that off, okay -- I can tell you this, a child born
23 then won't be driving a gasoline powered car because
24 there won't be any left. The lowest value anything has
25 is this energy value. If you can do anything with it,

1 don't burn it. By the way, this peak oil stuff, that's
2 what we make all our plastics with, that's what we make
3 our pharmaceuticals with. It's feed stock material as
4 well. Something to think about.

5 Had some interesting things going on. Okay. The
6 prices of everything seem to be jumping all over the
7 place. The interesting thing is you should be aware of
8 the fact that electricity -- I mentioned to you already,
9 that it varies all over the United States, and that
10 dictates markets and so on and so forth. Now, we're
11 being very proactive. We're getting ahead of the curve
12 here in Florida. And I do honestly believe that energy
13 efficiency and alternative energy, it's all about jobs
14 as well as solving some of our energy problems and
15 keeping some of the wealth in this state, and these can
16 be cost effective things over time that actually you
17 make money doing all this, so we should do it. But you
18 got to keep in mind, it's all relative to the cost. In
19 our case, we ship all our money out of the state of
20 Florida when we purchase any of this fossil fuel stuff.
21 But things you should be aware of, the cost of
22 electricity since after World War II has been relatively
23 constant. Okay. Things really started changing in
24 1998. You'll notice that all three of these curves, the
25 upper one is retail gasoline prices, and this is a --

1 you know, a week old now, okay, so I've got it pretty
2 much up to date. And then, likewise, with the price of
3 a barrel of oil. And then at the bottom, I show you
4 natural gas prices. You'll notice here that in 1998,
5 everything sort of started going up. Okay? All right.
6 When I first came to Florida, Governor Bush was all
7 concerned about changing the pie. We were concerned
8 about the fact that we're building all these natural gas
9 plants and the price of natural gas was going through
10 the roof. So, my gosh, the citizens of Florida would be
11 cut into that. Our current governor right now wants to
12 color in the state. I didn't give him my map with all
13 the green states. Florida isn't green yet. So sounds
14 like pretty soon we'll color it in green. We'll
15 accomplish that. That's good. But you go to look at
16 these prices. You'll notice here that natural gas
17 prices spike around a little bit more. Okay. We'll
18 comment to you that the sun's free. Now, can we make
19 efficient cars? Can we do all this kind of stuff?
20 Well, this is a plot that I unfortunately have a tough
21 time keeping up to date, too, okay, because the prices
22 of gasoline change all over the place and, of course,
23 it's not so easy for me to get the prices from all these
24 different countries. But if you look over on the left
25 there, I've got miles per gallon as a function of time,

1 and as I mentioned in the United States, CAFE numbers,
2 that's the blue around there, around the 23, okay?
3 They've been pretty much that same value since the late
4 '70's. I've got a cute story. I like to make this
5 comment to any new 16 year old, 17 year old. You know,
6 unlike your parents, my parents all gave them the keys
7 to the car. Jim, anytime you want to drive, no problem.
8 Oh, by the way, fill it up. So I'd go ahead and get
9 around on my hands and knees, crawl around to the back
10 of the car, look at my license plate, determine whether
11 it ended in an odd or even number, which then gave me
12 the privilege of sitting in line for two hours to
13 purchase gasoline. Now, kids are smart. They know
14 exactly how old I am. That was 1973, so I was 16. Do
15 the math. But the interesting thing is that we can be
16 more efficient. Most people that pay twice as much,
17 okay, for a gallon of gasoline then have cars that are
18 twice as efficient. No surprise. Okay. Now, I got one
19 for you. The Brits. Okay. Do I have the UK on here?
20 Yeah. Okay. So at the time we were paying 3.73, the
21 United Kingdom was paying \$8.20. So you say, those poor
22 English. Okay. They're paying twice as much for a
23 gallon of gasoline. A gallon of gasoline doesn't mean
24 anything. It's just a easy thing for you to pay. Okay?
25 Now, the interesting thing is you pay twice as much for

1 gasoline per year than they do. Now who do you feel
2 sorry for. Because you buy more than twice as much.
3 Okay? Now, we can argue also the actual price for a
4 gallon of gasoline pretty much is the same throughout
5 the world. It's the taxes that are the difference.
6 Okay. So people like the United Kingdom have been
7 collecting twice as much taxes as we have for the last
8 four years. Okay. What have they been doing with it?
9 Well, being Americans, we assume they pissed away half
10 of it. I ask you, what did they do with the other half
11 then? They have electric trains. What do we have?
12 Asphalt and cement. Where does asphalt come from? Oil.
13 Oops. Okay. And yet we're going to shovel more asphalt
14 projects around. Wait a minute. Or we could make them
15 out of cement. Wait a minute. Cement takes a lot of
16 energy, too. Okay. Why we can't put rails down? I
17 have no clue. Here's another one for you. 18.8 cents
18 on a gallon of gasoline is used to build our highways.
19 Okay. It's a fixed tax. That's how much money we use
20 to build the highways. Everytime you take your credit
21 card and stick it into that little machine, the bank
22 gets 3 cents on a dollar. So when we get to the \$6 a
23 gallon, the banks will be collecting 18 cents for the
24 transaction and we'll use 18.8 cents for the highway.
25 So I ask the question, geez, are you more upset about

1 Exxon or are you more upset about the banks? Oh, wait a
2 minute. The banks are all out of business. I used to
3 tell everybody that fuel cells are great. Whatever came
4 out of General Motors two weeks later came out of the
5 Department of Energy. Oops. What happens if General
6 Motors is bankrupt. I may be unemployed. Interesting
7 things to think about. Okay. Efficiency is where it is
8 for transportation. I want to talk about this. This is
9 our millions per barrel per day of oil. So you can see
10 here I've got our business as usual case there. It's
11 interesting. Every plot in the world looks like a
12 function of time. Whatever you are doing goes up.
13 Okay? And the whole goal in life should be, wait a
14 minute, how do I get it not to go up and get it to
15 flatten up. Told you about electricity per use. It's
16 true with gasoline. Now, like I said, back in the
17 '70's, we started importing. We got to the point where
18 we were kind of, you know, importing 30 percent of our
19 oil. Look at where we are today. And look if we
20 continue on our path in 2030. Okay. Where do you think
21 all the money's been going, folks? Okay. Now, what
22 happens if we set up a goal that we want to go ahead and
23 get off imported oil? Okay. So we went ahead and did a
24 study about how we go ahead and do that. Okay. And,
25 you know, I happen to be a republican, but drill, baby,

1 drill doesn't work, folks. Using the best, the absolute
2 best scenarios for Anwar, getting other oil from off our
3 coastlines, so on, so forth, you will notice that's at
4 the bottom of my curve as I add it up there. And,
5 furthermore, it doesn't even make up for the fact that
6 our existing oil production has been dropping every year
7 because the United States has exceeded its peak oil. So
8 you can see here that those pretty colors that I have
9 got down at the bottom don't even get me up to -- in
10 2030 up to the point where I was in 2007. Okay. So the
11 increased ethanol, Anwar and OCS don't even make up for
12 the fact that the existing Alaska oil, the Texas oil,
13 the California oil we already get is actually going down
14 every year. Doesn't even make it. If you look at the
15 top, though, look what increased miles per gallon does.
16 T-Bone Pickens for a while was telling everybody, invest
17 in wind farms so we can use that natural gas to fuel our
18 cars. So we did that. That's helped a little bit
19 there. Okay. If you cut back on your vehicle's miles
20 travelled, which, by the way, congrats, you guys did
21 that. You guys stopped driving. Great. Okay. All I
22 got to do is convince people that electricity is a sin,
23 gasoline is a sin, and tax the bejeebers out of it. It
24 gets the desired behavior. You stopped sitting. Now,
25 let's use that money for some good stuff. Interesting

1 things to think of. The reality is you got to do a
2 little bit of everything to pull it off. So we can get
3 off of imported oil in 2027 by doing a little bit of all
4 these things. There is the take home message. To give
5 you an example of the success that we have at UCF,
6 everybody's heard of Gatorade. Do you know what the No.
7 1 patent at UCF is? Okay. It's a ceiling fan. You can
8 go buy one at Home Depot. By the way, UCF gets the
9 proceeds from that. Okay. Helps keep some of my
10 researchers alive. Well, they sold a million of these
11 ceilings fans, and each one of these ceiling fans saves
12 on average \$20 a year in electricity. We save 20
13 million dollars a year on electricity from a simple
14 little ceiling fan. Energy efficiency products and
15 compliance and things are some nice markets to look
16 into.

17 Let me give you another example. This is a house
18 that was built in 1998 in Lakeland, Florida as part of
19 Rick Strawbridge's development at the time. The house
20 on the top there is a normal house. A normal control
21 house that he might build at the development. The house
22 in the lower right there with the white roof, and white
23 roofs are really nice here in Florida because they
24 reflect the sun, okay, it's got larger overhangs, shades
25 the windows, so that prevents sunlight going directly

1 into the windows on that home as well. Better air
2 conditioner, better insulation, so on, so forth. It's
3 got the photovoltaic panels on as well. The large array
4 there is facing directly south. There is another array
5 that's sort of on the left of that picture that is
6 picking up the peeking sun in the west. There's a solar
7 hot water heater over to the lower right. To give you a
8 flavor today, amortized -- and you can go on our
9 website, by the way. We have all these little
10 calculators, okay, that can tell you about what costs
11 are and everything else like that. So that's
12 www.fsec.ucf.edu. There's several other websites that
13 you can get to off of that. My --
14 www.myfloridagreenbuilding.- something. I don't
15 remember what it is. If you Google my Florida Green
16 Building, it's another website. You can get to it off
17 our site. It talks about all the efficiency things you
18 can do in your homes. Everybody knows that compact
19 fluorescent light bulbs is a smart thing to do. To cut
20 to the chase on this, ballpark, if you put a compact
21 fluorescent light bulb in, you save on your electricity
22 use. Okay. That's important. For every buck you save
23 on electricity for the consumption by the compact
24 florescent light, you save \$1.30 on not having to air
25 condition your space. Okay. The use of the compact

1 florescent light bulb in Florida is more important
2 because it's not heating up your house which you now
3 have got to air condition that space. Okay. That's the
4 bigger savings to us, okay, here in Florida. A better
5 air conditioner, more efficient air conditioner is
6 important. Ballpark, the house down in the lower right,
7 it sold first, cost \$40,000 more. Now, at the time, we
8 don't know exactly what the most cost effective things
9 were. Today, it's appraised at \$80,000 more. How do I
10 calculate payback on that? You don't. You haven't
11 been. Wait a minute. This house is worth more. Oooh.
12 Okay. Now, those poor appraisers have no clue how to
13 appraise PV panels. So we've got other issues to deal
14 with, too, but something to think about. Now, that
15 standard home up at the top used 22,000 kilowatt hours.
16 Okay. The photovoltaic, the zero energy home, 70
17 percent of it was just through energy savings. Okay?
18 All right. And I put electricity cost savings in there.
19 By adding the photovoltaics on to the roof, we were able
20 to get it down to the point where the house only used 8
21 percent. Okay. So, you know, smartest thing to do in
22 Florida, every home is a zero energy home. Now, we
23 don't even grade our homes. You can go buy appliances,
24 they have little gradings on them. I am hoping
25 eventually that this standard -- this is a standard that

1 several of the building associations are working on.
2 Basically, it's called the home energy rating index.
3 Okay. And so, in this particular case, with this scale,
4 a hundred here is listed as a new home built within 2006
5 codes. Okay. Zero energy home is down there at zero.
6 Okay. And, roughly, the average home here in the state
7 of Florida is somewhere up around 150. Okay. And so
8 your home's graded. Okay? I want everybody to require
9 that your home gets graded, okay? It's useful
10 information. Right now, you've got to get a radon test
11 for everybody. Why not get your home graded? Every
12 time you do a transaction, we should do that. Then we
13 should provide the homeowner with various cost effective
14 ways to make his home more energy efficient. We've got
15 to start grading our homes. We'll be doing that soon.

16 Solar hot water heating, solar hot water heaters.
17 Here's some pictures for you. Photovoltaics. In
18 Florida, in a lot of the cases photovoltaics are cost
19 effective because you have to put transmission lines in.
20 In the two Progress Energy nuclear power plants that
21 we're talking about at 7 billion dollars apiece, you're
22 going to spend 3 billion dollars for the wires. That's
23 what you're going to do. It's a big huge, giant power
24 plant. You've got to run wires all over the place, too.
25 Okay. The neat thing about photovoltaics, you put it on

1 your roof. That's where the cheap real estate is, too.
2 It's free. All right. The world's largest market for
3 solar energy is in Germany. Germany has less of a solar
4 resource than Alaska. It has nothing to do with the
5 sun. Okay? It's called policy. It's called, do we
6 want to drive the markets. Okay. I hinted to you that
7 New Jersey outdoes the sunshine state. You can see here
8 that New Jersey doesn't have the same solar resource as
9 Florida does. There's another interesting thing you'll
10 notice. In Arizona, New Mexico desert, that little part
11 of California, so forth in there, yes, that's ballpark
12 100. Florida's 75. Okay. Now, the interesting thing,
13 though, is it's not a solar resource. The issue is free
14 real estate. To get the sun's energy, you need lots of
15 area to collect it. So the reality is in a world where
16 traditionally we make electricity and electric power
17 companies build big power plants to do that, I can go
18 ahead and use a lot of real estate in Arizona and New
19 Mexico, out in the middle of nowhere, which is free,
20 nobody cares about it, and put these big solar power
21 plants out there. So that's what they do. And, by the
22 way, they're cost effective. And, in fairness, Florida
23 Power and Light owns most of them, the large ones that
24 are out there. Florida Power and Light owns 45 percent
25 of all the wind in the United States. Unfortunately,

1 none of those are in Florida, but they own them. In
2 fairness, we are starting to put a solar thermal
3 electric. This is where we take mirrors, generate
4 steam, then run them through a steam turbine. We're
5 starting to do that in Martin County, Florida as an
6 augment into the existing steam turbine plants that FPL
7 has. But the real issue is real estate. So power
8 companies like big power plants. Where is the free real
9 estate in Florida? It's on your roof top. It's on
10 highway right-of-ways. It's on the Wal-Marts and so
11 forth. How do I get it? So FPL, Progress, OUC in
12 Orange County, okay, own the power plant on my roof.
13 That's what we got to figure out how to do. Real estate
14 on your roof is free. That's what the issue is. But
15 it's big power plant to small power plant.

16 Give you a quick analogy here. Bear with me on
17 this one. IBM invented the mainframe computer. Bunch
18 of years later, they invented the PC. We know how to
19 sell the mainframe computer, we're making lots of money
20 on it, let's just keep doing this. Imagine if IBM said,
21 the heck with the mainframe computer, we're going PC.
22 They wouldn't just own the computer world, they'd own
23 the world. And, by the way, IBM is one of the big
24 investors in solar, by the way. It's interesting if you
25 think about that. Okay? Well, all right, what was the

1 super computer way back when? A really big mainframe.
2 Anybody know what a super computer is today? A bunch of
3 network PC's. Think about it. It's the same way we're
4 going to do energy. A bunch of network PC's. You know
5 where the energy storage is going to be? Plug-in hybrid
6 in your garage. Okay. We're going to go ahead and
7 integrate your home and your car and the way you make
8 electricity and energy efficiency all in one big system.
9 Okay. And there is all those opportunities. Oh, I did
10 leave this in here. Oh, such a deal. Okay. Florida
11 isn't green. Okay. If I looked at this map in
12 September of 2006, there would have been a lot less
13 green all over the place. We were hoping to be the
14 first in the east. I mean, in the south. North
15 Carolina and Virginia beat us to it. But we're going to
16 color our baby in green and we're going to have 20
17 percent. Okay. And all those little places that have
18 the cute little sun there are states that have public
19 benefit funds that actually promote solar and buy down
20 the cost. Okay. We had 5 million dollars last year,
21 and all those rebates expired, and it comes out of the
22 general tax fund. Okay. And I will guarantee they
23 probably won't have them again this year. Okay?
24 Because, as you know, we're cutting budgets all over the
25 place. We do need to put a public benefit fund in

1 place, but we're not even willing to tax cigarettes yet,
2 so we got a ways to go. I'm hoping we'll pull that off
3 someday.

4 Okay. The jobs are in the installation. Okay?
5 Went to all the markets here, 20 percent portfolio,
6 which we're going to pass pretty soon. People will
7 arrive on our door step, okay, because you manufacture
8 these things where the market is. There's a 20 percent
9 market because by law there is. I guarantee they'll
10 show up. Okay. The jobs really, though, are in the
11 installation of these things, because they're going to
12 put PV on your roof or solar thermal hot water on your
13 -- it's all constant installation. Who are you putting
14 back to work? All those unemployed construction workers
15 that aren't building new homes. There's a lot of jobs.
16 If you do this on a job per megawatt basis, it's a lot
17 of job years. Okay? A lot of education and training.
18 We actually bring in \$800,000 a year in short course
19 fees. Okay? I'm running PV installers workshops now
20 twice a month. They're sold out in advance. And these
21 people pay a thousand bucks for the week, the course, to
22 do this. Okay? I'm sold out six months in advance.
23 Three-quarters of the people are coming from outside the
24 state of Florida. Okay? Rest of the United States gets
25 it. We're getting there.

1 A lot of neat things with educational activities as
2 well. The eighth graders actually in the state of
3 Florida compete in the middle school science bowl. We
4 hold it at our place. As part of that, there are car
5 races. Okay? So I actually have kids racing solar
6 powered cars. I have kids throughout the state of
7 Florida competing in a national competition. We
8 actually send eight teams. We have a competition on
9 this on fuel cell powered toy cars. So when the
10 president said, a kid born today -- previous president
11 -- you know, 16 years from now will be driving solar
12 powered cars, eighth graders in Florida already built
13 them, folks. So as far as the future goes, I'm very
14 optimistic we'll educate our strong work force here to
15 get us through these problems we're dealing with today.
16 Any questions?

17 MR. LEWIS: Jim, one of your main messages, I
18 guess, is that if we don't change building policies and
19 codes and establish things like public benefit funds,
20 that we're going to be at a competitive disadvantage in
21 terms of attracting Cleantech companies and jobs to
22 Florida.

23 MR. FENTON: And I will tell you it's even a little
24 bit different than that. Keep in mind, when we change
25 the building code, that affects the new homes you build.

1 8.3 million, you do 100,000 a year on the new ones,
2 isn't quick enough. By all means, let's fix the new
3 building code. We've got to go in and have programs
4 that makes it effective for the homeowners somehow,
5 okay, to finance and go in and retrofit our existing
6 homes. Okay? And so this is about financing, getting
7 the audits in. I mean, you know, that guy, the poor
8 homeowner that's giving up the beer? Okay, I want him
9 to sit on his couch, eat his potatoes and watch football
10 all the time, and magically the state of Florida somehow
11 or other makes your house more valuable and lowers your
12 electric bill. We've got to come up with a policy that
13 does that. It's doable. It's called financing is what
14 this really is.

15 MR. LEWIS: I think you're providing us with a lot
16 of ammunition. I just want to say one thing before the
17 break. When you ask questions of any of the speakers,
18 please state your name and who you're with and go to the
19 microphone so the transcriber can enter you in the court
20 record.

21 MR. FENTON: I think the opportunity clearly that
22 the solar -- I mean, I work at the Florida Solar Energy
23 Center. I think the opportunities are here. I should
24 announce because I think people aren't aware of this,
25 but the Orange County Convention Center will have over a

1 megawatt of PV in the next couple of years. So the
2 Orange County Convention Center is doing that for what
3 reason? To book conventions, you got to be green. And
4 the Orange County Convention Center is going to be able
5 to say that we've got more PV than the San Francisco
6 Marconi Center. And they made the decision to go ahead
7 and put the PV up there -- it's going to cost them more
8 than the electricity out of the wall -- because it's a
9 marketing tool. People will book conventions because
10 you are a green convention center. Other ways of
11 looking at things.

12 MR. BRUDERLY: Jim, Dave Bruderly from Plain Power
13 Energy Company in Gainesville and Wise Gas, Inc. You
14 made the point of policy has to define the marketplace,
15 and I think we're finally seeing in this county that
16 market driven policies don't work if you don't have the
17 right government -- or market economies don't work if
18 you don't have the right government policies in place to
19 shape the boundaries of those markets. You stressed
20 efficiency as something that's important for this state
21 in addition to cost, and I strongly agree with that, but
22 I think that we need to have an exercise with the
23 Florida legislature in adding one more criteria given
24 the severity of the climate crisis that we seem to be
25 stumbling into with business as usual, and that policy

1 performance criteria, in my judgment, would be
2 emissions, greenhouse gas emissions. And if we start
3 assigning values to everything that we do in our
4 economy, whether it's grams of CO2 emissions per gallon
5 of fuel that you buy, or grams of CO2 emissions or
6 kilograms per kilowatt hour of electricity, if we can
7 start putting those numbers out there on the marquis
8 right next to the price, here's how much pollution you
9 folks are making with your day-to-day buying decisions,
10 then the markets will work. And I think Florida can be
11 a leader in doing this. Second point, you mentioned
12 policy in Germany. The City of Gainesville has just
13 voted to authorize Gainesville Regional Utilities, a
14 utility owned by the people, to implement a feed in
15 tariff program to motivate distributed generation on
16 roof tops with solar energy. And we're looking for
17 investors who want to help local companies learn how to
18 do that so that Sun Edison doesn't come here from
19 California with their hundred million dollars venture
20 capital and just blow us all away. So that's why I'm
21 here today. Thank you.

22 MR. FENTON: Thanks. I do agree with you. As I
23 tried to hint that, you know, a lot of electricity is
24 used in your buildings, okay? And so it really is more
25 of a local -- you know, what is it. Government's always

1 local or something, but -- effect, and so, yes, you
2 know, regional utilities, municipal utilities, because
3 they're made up of the citizens, will probably be
4 leading in a lot of these activities than the
5 independent owned and operated utilities. When you
6 think about it, in fairness to Florida Power and Light,
7 where does it want to put a wind turbine? Where it's
8 the most cost effective place to put a wind turbine,
9 which is in Texas. It's not in Florida. Your municipal
10 utilities want to do what? Put the most cost effective
11 thing in your area. Okay? The FPL model's fine. I'm
12 not saying anything about it. But the goal really is at
13 the local level. And in fairness to the regional
14 utilities, municipals and co-ops are doing a lot of
15 interesting things. A lot of them have programs already
16 on the energy efficiency activities.

17 MR. BRUDERLY: What about the emissions, the
18 emission standards?

19 MR. FENTON: Yeah. Now, cap and trade, when we're
20 talking about CO2, I remind everybody that we had socks
21 and knocks problems, okay, and the U.S. Government
22 implemented effectively the same type of system we're
23 talking about now where you can actually trade emissions
24 credits. All right? See, the interesting thing about
25 it is that you can put taxes on these things, you can

1 argue about all of them, but in the case of these
2 pollutants we're talking about, they don't really know
3 geographical boundaries, so I don't have to make
4 everybody reduce the same amount. I need the air
5 pollution to be reduced by X amount. Okay? So there
6 are mechanisms. And the cap and trade scheme we're
7 exploring here in the state of Florida, the Department
8 of Environmental Protection has been tasked with
9 implementing that, and we will be doing that. We've
10 already joined sort of the reggie states, all the states
11 up in New England that are paying a lot of money for
12 electricity, they got together, they were concerned
13 about all this. The reason they're not coal is because
14 they already get the coal air pollution from the
15 midwest, so they're a little bit ahead of us. But we
16 will be putting a price on this. With truth in product
17 labelling, I agree with your comment that you need to
18 know how that is. If I had my choice, every product you
19 buy out there would tell you how much water was used in
20 the production of that product, it would tell you
21 exactly how much energy was used in the production of
22 that product, and it would tell you the total emissions
23 used for that. I'd like to tell you a cute story on
24 this one. It used to be, and now it's -- we're even
25 doing better. The best thing to do is to reuse rather

1 than recycle. But when you used to go to the grocery
2 store and they'd ask you plastic or paper, okay, if I
3 asked you what was best for the environment, well, you
4 might have different answers, by the way. If I asked
5 you what you chose, plastic or paper, I like the plastic
6 bags because I can grab the kitty litter, or I got to
7 run up to my apartment, I can carry six bags here,
8 whatever you chose. If I asked you what was better for
9 the landfill, almost everybody would say that paper's
10 probably better for the landfill. Plastic bags were by
11 far and away better for the environment. Has nothing to
12 do with what the material's made out of. I tricked you.
13 Okay? Why is that? Well, it takes five trucks to
14 deliver paper bags and one truck to deliver the plastic
15 bags because they're so skinny and thin. So you stuff
16 them in. They got to deliver them to the grocery store.
17 It's the diesel emissions from the trucks delivering the
18 bags that are by far and away the impact to the
19 environment. Nothing to do with what the bags are made
20 of. You got to be careful. When you look at these
21 things on impact for the environment and cost, you got
22 to do the true life cycle, the total big picture.

23 MR. LEWIS: Jim, one question. Unlike other
24 states, Florida does not have automobile or vehicle
25 inspections yearly. Other states do, and they test your

1 emissions. Should Florida establish an automobile
2 inspection?

3 MR. FENTON: I don't think so. Okay? I would
4 rather have us go ahead and say we'll provide -- we
5 can't -- we can't set federal CAFE standards.
6 California and the federal government is arguing about
7 that. What I would like us to do is provide free air at
8 every gas station. Okay? Because Obama was right on
9 this one, folks. Improperly inflated tires cost us 4
10 percent of the total amount of oil we use in the United
11 States. That's a lot. Make it easy for you to keep
12 your tires inflated, rather than driving around,
13 figuring how to inflate my tires. They used to do that
14 for you, remember? Okay? So I think I'd rather work on
15 programs like that. Or give you a big tax break, which
16 I can do in Florida, too, if you buy a more fuel
17 efficient vehicle. I'd rather go down that path.

18 You wanted to cut me off. Sorry.

19 MS. CHADWICK: I do, sorry. You are going to stick
20 around, though?

21 MR. FENTON: Yes.

22 MS. CHADWICK: He's a wealth of information. Thank
23 you. Sorry for running over. Obviously it was great
24 information. We are going to take a break. I'm sure
25 you are overdue. We unfortunately are behind,

1 obviously, so if you guys could maybe just keep it to 10
2 minutes max and then come back in so we can try to get
3 out of here on time, that would be super. Thank you.

4 Oh, real quick, Tom Lands has -- raise your hand,
5 Tom. Tom is the president and founder of AquaFiber, our
6 sponsor. So he's now here. He wasn't here when we
7 announced his company earlier. He does a lot of water
8 stuff, so you need to check with him about that.

9 (A break was taken from 10:04 a.m. until 10:15
10 a.m.)

11 MS. CHADWICK: Okay. The next two presenters are
12 folks that are coming in from some of the large
13 companies here in our region that do quite a bit of work
14 in the Cleantech sector, and we're really grateful for
15 both of these gentlemen taking time out of their busy
16 mornings to be here.

17 First, we have Frank Bevc. He's with Siemens
18 Energy. Frank is currently the director, technology
19 policy -- I'm sorry, he's the director of the technology
20 policy and research programs at Siemens Energy. He's
21 responsible for the evaluation, selection and
22 development of advanced energy products and technologies
23 that serve the global energy markets. Current product
24 initiatives cover a diverse field, including carbon
25 capture technologies, smart grid distribution systems,

1 advanced electric powered transmission components,
2 advance turbo machinery systems, renewable energy
3 systems, and supporting technologies for all of the
4 above. With that, Mr. Frank Bevc.

5 MR. BEVC: Thank you, Kirstie. Jim is always a
6 very hard act to follow, so I certainly will not have
7 his degree of enthusiasm, even though I'm pretty
8 familiar with the topic that I have. I'd like to thank
9 both the Orange County folks and UCF folks for inviting
10 me out today to talk a little bit about Siemens and
11 about Cleantech.

12 Siemens, or Westinghouse, I should say, has been a
13 part of Orange County since 1980 when about 20 people
14 moved into some rented office space at 1011 East
15 Colonial. And then about a year later, there are about
16 150 of them that moved out to an abandoned K-Mart at
17 6655 East Colonial. And then in 1983, a little over 25
18 years ago, we moved to our current campus out across the
19 street from UCF. So we have partnered with UCF and been
20 a part of Central Florida in the energy and power
21 generation fields for 25 years now, and Orlando is home
22 to all of us and we enjoy being here.

23 What I would like to try to talk about in the next
24 hopefully 20, 25 minutes is to give you a little
25 overview of Siemens and Siemens here in Orlando, to talk

1 about Siemens' global portfolio of Cleantech and
2 environmentally focused products and businesses, to talk
3 specifically about the success story that the wind
4 energy business has been to Siemens and to the Orlando
5 facility for Siemens, then to talk really about three
6 approaches for Cleantech growth through research in
7 university partnerships and through venture capital
8 funds and funding from venture capital firms, and then,
9 lastly, to talk a little bit on federal funding and
10 what's in the stimulus package that was proposed last
11 week and will be making the press and headlines for the
12 next month or so. So with that, basically Siemens is
13 one of the largest electrical, electronics companies in
14 the world in Euros, which means you multiply by 1.3,
15 1.4, which means we're about a hundred billion dollar a
16 year company with 427,000 employees worldwide, spend
17 about 3.8 billion on R&D each year. That's in Euros.

18 Here in the U.S., we're also a major company.
19 We're about a -- in terms of dollars, about a 18, 19
20 billion dollar a year company with almost 70,000
21 employees, and we do about a third of our global
22 research here in the U.S. So Siemens, although it's
23 headquartered in Germany, is very much a U.S. company.
24 And, of course, the rest of the areas are a big part of
25 that.

1 Siemens is organized into three sectors. Working
2 from the bottom industry, health care and energy,
3 industry includes the smart Siemens building
4 technologies, which talks an awful lot about the energy
5 buildings that Jim had mentioned. I'm not quite sure
6 why they are. People make the claim that we process a
7 hundred percent of the mail in the United States.
8 Sometimes that's not always a good thing to admit to.
9 The other claim we make is that we've handled baggage at
10 a hundred of the largest airports here in the U.S.
11 That's another thing that probably isn't too good to
12 admit to either and claim as a challenge, but,
13 nevertheless, we're part of the infrastructure of both
14 the U.S. and major economies throughout the world. In
15 healthcare, everything from hearing aids to CAT scan
16 systems and pet scan systems. Medical information
17 technology, we're the largest processor of medical IT in
18 the United States, which means, of course, what's being
19 talked about in Washington these days is of great
20 interest to Siemens. And then the part of Siemens that
21 I come from, the energy segment, is, as a global
22 segment, about a 23 billion dollar a year kind of
23 business. We have almost 84,000 employees worldwide.
24 It's a profitable business. About 25 percent of our
25 sales come from the Americas. Most of that, over 20

1 percent, from the United States. You can see that we're
2 split fairly evenly otherwise between Asia and Europe
3 for most of our sales. Germany, being Siemens' home
4 country, is no longer the major market for our company.
5 Basically, it's one of the smaller -- well, it's the
6 largest European market, but it's certainly not the
7 dominant market for Siemens sales these days. Our
8 energy sector's divided into six divisions. Basically,
9 we cover everything from oil and gas down in the ground
10 relative to the technologies needed to bring it up out
11 of the ground to the switches and distribution devices
12 that basically allow the lights to be turned on in big
13 buildings like this. So an oil and gas segment, a
14 fossil power generation segment, renewable energy,
15 services to take care of all of those, the big heavy
16 wires, transmission group, and the smaller distribution
17 level activities where smart grid kind of things are
18 developed. Siemens has about 5,000 employees in
19 Florida. We have over a half -- thankfully, we have
20 over about a half a billion a year in payroll here in
21 Florida, we have 59 locations and about a million, 1.2
22 million square feet worth of facility space, most of
23 that white collar office space. We do have
24 communications manufacturing facilities and even some
25 turbine service manufacturing facilities down in Boca

1 and some other locations. But almost all of our efforts
2 here in Florida are intellectual property based rather
3 than heavy manufacture, and basically Florida Power and
4 Light, Progress Energy, and GRU and others are good
5 customers of ours, and we sell about 1.3 billion worth
6 of energy related products here in Florida for Florida
7 customers.

8 As I said, we've been out by UCF in our quadrangle
9 campus for 25 years now. We have about 3,000, or over
10 3,000 employees there. Again, a white collar
11 environment with engineering, marketing, project
12 management, procurement, business functions. And it was
13 until from 1980 through 1998, Westinghouse, and Siemens
14 acquired Westinghouse prior generation back in 1998. So
15 for the past 10 years, we've been Siemens Westinghouse,
16 and now Siemens. And most of the growth in the past two
17 or three years has really come from environmentally
18 driven businesses, environmental clean up and
19 renewables, wind in particular. If you look at Siemens
20 overall, we have an environmental portfolio that is
21 really second to none. Our biggest competitor, of
22 course, is General Electric. And you can talk about
23 dancing elephants and ecomagination and all that kind of
24 stuff, but when it comes to sales and products and that
25 kind of stuff, over a quarter -- over 22 billion dollars

1 worth of sales globally each year is in environmental
2 products that drive down the amount of CO2 that's
3 emitted globally. In the next three years, or two years
4 now I guess it is, we expect that to grow by another 10
5 billion dollars. So it's like one of the fastest
6 growing segments of our company globally. And we are
7 part of the group of companies in the United States,
8 U.S. Cap, that is pushing for a climate change policy
9 that includes cap and trade or some measure of putting a
10 price on the cost of carbon. And, hence, some of the
11 products that help do that is improving the efficiency
12 of existing fossil power plants, certainly renewables,
13 and then transmission and distribution efforts.
14 Siemens' water technology is also part of our industry
15 group and is into filtration and water purification.
16 Mobility in terms of those electric rails and mass
17 transit systems we're talking about, as well as Osram
18 Sylvania. Sylvania light bulbs is a Siemens company.
19 Here in Orlando, the primary things that I think we can
20 claim as the cleanest of the clean energy, those
21 renewable kind of things, is, first of all, driving up
22 the -- is driving up the efficiency of existing fossil
23 power plants. Basically, those old dirty coal plants up
24 in West Virginia and the midwest and that kind of stuff
25 have moved from about a 28 percent average efficiency to

1 a 35 percent average efficiency over the past 15 years
2 or so, in part by upgrades and modernizations and those
3 kinds of things. And every increase in -- percentage
4 increase in efficiency, of course, means fewer carbon
5 dioxide emissions. Certainly, there has been a lot of
6 clean up of sulfur and noxious emissions and those kind
7 of things, and part of that is due to the secondary, and
8 that is through air pollution control on major power
9 plants. We acquired a company called Wheelabrator
10 Pollution Control a few years ago and another company,
11 New Jersey company, called Advance Boiler Technologies,
12 and both of those deal with cleaning up coal fired power
13 plants. So that's a current mission and one of our
14 current high growth kinds of markets. The future way
15 of, in part, cleaning up coal from a end use, from a
16 clean use capability totally is basically, instead of
17 burning it, to gasify it. Gasification allows coal to
18 be used as a feedstock, as a petroleum substitute in all
19 those plastics and other applications. They also allow
20 the total capture of CO2 through a coal -- from a coal
21 fuel powered plant and, hence, the early start up, if
22 you will, in technologies relative to cleaner use of
23 coal as a source through gasification. And, of course,
24 the renewable success story is wind, but also our energy
25 sector because of the amount of waste energy that exists

1 in heat and power plants is a natural for our
2 desalinization business. So we are the largest provider
3 of desalinization systems coming out of power plants,
4 coupled with power plants, primarily in the Middle East
5 these days, but also it's a fairly big market for us.
6 You can see that the ramp up in both our environmental
7 systems and service business and our wind power business
8 is -- has been a relatively recent kind of thing over
9 the past three or four years. And you'll notice that
10 there are numbers on the sales axis, but you can tell
11 that there's a doubling and tripling and quadrupling of
12 sales over a two and three year kind of time period in
13 terms of actually hundreds of millions of dollars. So
14 both of those are our fastest growing areas. Hence,
15 when asked about Cleantech and to talk about
16 environmental kinds of things, that's a natural message
17 for us. One that we're very happy to do anytime we can.
18 Wind energy is not the traditional view of -- not
19 necessarily the traditional view that's held of a small
20 wind turbine out on a farm. Mainly, they're used to
21 pump water. Those systems still exist, but technology
22 has moved. Technology and composites and control
23 systems and new types of generators and those kinds of
24 things have allowed a ramp up in the size of individual
25 wind turbines and, indeed, wind projects. So Jim

1 mentioned that the best winds are out in west Texas and
2 up in the plains and up in Wisconsin, Minnesota. That's
3 right. And, indeed, the size of wind turbines -- my
4 favorite graphic is the -- we're now 20 747's high in
5 terms of wind turbine size on the big systems. Those
6 allow us to drive down the price of wind such that we're
7 nearing the point where the subsidies aren't going to be
8 needed anymore. The typical wind farm order that we
9 have these days is several hundred megawatts in size, so
10 it's essentially at the same scale as the traditional
11 coal fired power plant was maybe 20 or 30 years ago. So
12 wind energy is becoming a much larger part of America's
13 energy generation resources, and certainly growing in
14 size relative to the size of the product. The --
15 Florida's best wind resources are offshore. That is,
16 the winds are much higher along the coast or off -- just
17 off the coast than they are on shore, and that is the
18 area that we would see market development for wind
19 energy in Florida. The longest suffering U.S. wind
20 project off of Cape Cod finally got its environmental
21 impact report published last week and looks to be moving
22 forward, and you can tell from the bottom half here that
23 the Europeans, Denmark and Germany in particular, have
24 moved offshore with projects that are very significant
25 in size. There are also some very large mega wind

1 projects. T-Bone Pickens is doing a 2,000 megawatt, the
2 size of a nuclear power plant, wind project in west
3 Texas. Two others, one in Minnesota, another one in
4 offshore London, are the kinds of things that will move
5 wind energy from small scale kind of systems to get up
6 to that 20 percent of the total electricity generation,
7 or a much larger percentage of the electricity
8 generation. And, basically, with Siemens Energy, we've
9 added about 700 new jobs in wind energy alone in the
10 past since -- in the past two years since January of
11 '07. About a hundred here in Orlando, and, again, the
12 engineering and projects kind of people, we've opened a
13 new factory in Fort Madison. Unfortunately, when you're
14 shipping airplane size components around, transportation
15 becomes a very big part of the decision, and the
16 Mississippi, and being halfway between where the two
17 largest markets are sort of drive where those big
18 factories are going to be located for wind energy. So
19 there is hope certainly for component factories like the
20 one in Ohio that put -- President Obama visited a couple
21 days ago, but the big component places are going to be
22 where the transportation systems are the best.
23 Basically, we're -- we've initially sized that factory
24 for 500 megawatts. That's about the size of -- that's
25 the size of the Stanton plant out by the airport, and

1 we've doubled that capacity in the past year, 2008, such
2 that we can now put out wind blades and wind turbines
3 that can meet the market demand.

4 Of course, Siemens -- there are other renewables
5 besides wind energy. Solar thermal is also at the
6 hundreds of megawatts size power plants at this point in
7 time, and the solar thermal mirrors and focused thermal
8 systems, and driving steam turbines has traditionally
9 been a big business for us. We are -- in the United
10 States, have 100 percent market share with all of the
11 turbo machinery and solar thermal things. I doubt we'll
12 be able to maintain that record, but certainly we know
13 very much about doing solar thermal power plant
14 development. And also we are a packager and installer
15 of grid scale solar PV systems. So, hence, we're a
16 customer for the PV manufacturers more so than a
17 manufacturer of PV equipment ourselves.

18 Moving quickly into some of the things that sort of
19 drive Cleantech ventures and Cleantech business growth,
20 and the first is innovation. And that is -- you know,
21 Siemens, I think, prides itself on being a technology
22 provider, and increasingly, companies like us and like
23 GE and like MHI, use a open innovation concept for where
24 our technology comes from. So we partner with
25 universities and start up businesses and individual

1 inventors and we do a lot of research and development on
2 our own. About 650 million the last year in R&D in
3 energy. Plenty of engineers, lots of patent activity,
4 lots of patent activity applications, as well as patent
5 maintained. But a good deal of where our technology is
6 coming from is from university research partnerships.
7 UCF being just across the street has been our longest,
8 and in the U.S. is our most active university partner,
9 and certainly work with MIT and Carnegie Mellon and Penn
10 State and Purdue, and not too far away, the University
11 of Florida and Florida State and a few others. But we
12 have more of our employees out here in Orlando. Over
13 400 of them are UCF alumni, so we have sort of a natural
14 base for people who know people, and partnerships and
15 technology development kinds of things come from that.
16 The three examples, the Siemens Energy Center basically
17 is a turbo machinery research and development center
18 that was just dedicated last fall, in part with the
19 equipment and some cash donated from Siemens and the
20 building facility located on the UCF campus, and about
21 25 of our engineers are actively engaged in doing
22 research with faculty and students out there. Also last
23 fall, the Florida Center for Advanced Aero Propulsion,
24 one of the state's centers of excellence, had its kick
25 off meeting, and Siemens is pleased to provide at least

1 moral support up to today for that center, a consortium
2 of UCF, Florida State, the University of Florida, and
3 Embry Riddle -- I think that's all of them -- to again
4 look at turbo machinery technologies and aero propulsion
5 technologies that support both NASA's mission and the
6 mission of rotating equipment suppliers like us and like
7 MHI.

8 And, lastly, we're one of the investor advisor
9 board members of the Nano Tech Center over at UCF.
10 Applaud both that center and work that's being done at
11 UCF in voltonics and technologies that sort of feeds
12 into our portfolio of what's needed.

13 The other approach that sort of encourages
14 Cleantech ventures and start up companies is through
15 venture capital, and Siemens basically, as a
16 corporation, has its own venture capital business that
17 is run as a standalone venture capital firm that's
18 responsible for the kind of financials that any other
19 venture capital firm is. That is, it looks to make
20 money in the long term. Basically, it's celebrating 10
21 years of existence this year. We have about a billion
22 dollars, 700 million Euros, capital under management,
23 investments in over a hundred companies, and in 40
24 venture capital funds, we have a fund of funds manager
25 investing in funds as well as individual companies.

1 And, basically, we try to look for synergies between
2 what our core businesses are, and as broad as Siemens
3 is, that's a pretty wide spectrum, and what a new
4 venture brings to the world in terms of innovation. In
5 the U.S., our venture capital offices are located in
6 Boston and Palo Alto. It's a relatively small group,
7 only 30 people, but basically with 30 billion dollars
8 for investment looking for ideas. And you see the
9 website address there, siemensventurecapital.com. We're
10 not particularly creative when it comes to
11 communications, but that website will provide more
12 information as well as the specific individuals that are
13 responsible for technologies and the right person to try
14 to get a message to if you're interested in pursuing any
15 venture capital kind of things.

16 And the last two slides really are not Siemens
17 information, but really the draft stimulus package that
18 the House Appropriations Committee released last week.
19 And, basically, that package in great detail is
20 available at house.gov, www.house.gov. That's the House
21 of Representatives website under the Appropriations
22 Committee, and there's a 14 page summary which is pretty
23 much copied in two pages here. It's the highlights. As
24 well as the massive 258 page bill that spells out in
25 gory details, at least in draft form, what is hoped to

1 be provided, and a 76 page report on logic behind the
2 258 page bill. Sometimes the report is far more
3 confusing than the bill itself is, so, whatever. But
4 basically what I wanted to do was highlight that now is
5 a particularly good time to be pursuing energy
6 technologies relative to funding or the funding
7 opportunities that will exist coming out of the federal
8 government. Out of the 825 billion dollar stimulus
9 package, 54 million is Cleantech investment, and 54 --
10 did I say million -- billion is cleantech investment.
11 And a couple things in terms of energy systems, in terms
12 of industrial energy efficiency, in terms of blocking
13 grants to local governments and for developing -- both
14 developing and deploying energy efficiency technologies,
15 in terms of smart grid improvements, Gainesville GRU in
16 implementing a feeding tariff is one part of what's
17 necessary to achieve the highest gains in energy
18 efficiency, electricity efficiency, improvements and
19 reductions in consumption, because with that feeding
20 tariff, you are encouraging people to make an economic
21 decision on how to generate the realm of electricity or
22 the time of day to use their electricity, and that's
23 sort of essential to achieving the hasty reductions that
24 are needed. In addition to that, the grants and loans
25 to businesses relative to implementation of energy

1 efficiency, so -- and then one area in particular that
2 may be of interest to start up companies that have
3 technologies focused on energy is, of the 1 point --
4 science, basically, the alumni administration hopes to
5 or is saying that they want to double the amount of
6 funding for research and development. One piece of that
7 is a 1.9 billion dollar line item for basic science
8 research, and included in that is a 400 million dollar
9 line item that establishes or focuses the Advanced
10 Research Projects Agency, Energy Department E, into
11 stimulating high risk, high payoff technology ventures
12 and technology investments that is, for both big
13 companies like Siemens and certainly for innovative
14 companies and start ups, a fund that will certainly
15 exceed what's available in the SBIR kind of funding
16 regime for moving from those first ideas, proof of
17 principal kind of stuff, into implementation. That will
18 be administered very much like DARPA, which is the
19 Defense Advanced Research Projects Agency, and certainly
20 will have, you know, competitive submittals and
21 proposals and grants and all that other kind of stuff.
22 But for energy innovation in particular, that's a new
23 pool of money that certainly should not be overlooked.
24 There is also a host of tax credits for us. What is
25 important if you're building in the wind energy industry

1 is the production tax credit which, until the American
2 Recovery and Reinvestment Act, had been renewed on an
3 annual basis. Well, if we're going to put in a factory
4 and build wind turbines, that's a two year construction
5 cycle for putting in the factory and another three years
6 worth of order cycle kind of stuff for sort of trying to
7 pin down the demands that our customers will have for
8 wind turbines. So a three year as a minimum, and
9 hopefully longer than that five year kind of extension
10 on the tax credit that comes from producing wind energy
11 is important, not so much at Siemens but to our
12 customers, because it allows them to make those longer
13 term kind of decisions. The Europeans, instead of going
14 the route of a tax credit, do what GRU did in
15 Gainesville for the first time. They put in a feeding
16 tariff. That basically means that for a period of time,
17 and I believe it's 20 years, a rate of -- a sales rate
18 for electricity is guaranteed, and, hence, if you're a
19 investment banker or certainly a business manager of a
20 company that wants to generate electricity, you have no
21 uncertainty relative to what your source of revenue is
22 going to be. So certainly feeding tariffs are better
23 than production tax credits, but at least both are in
24 the right direction with regard to encouraging
25 renewables and those kind of things. So technology

1 partnerships, venture capital funding, and federal
2 funding through both the stimulus and through the normal
3 federal channels, I think, are three ways that we see as
4 Cleantech being encouraged throughout the U.S. and
5 certainly here in Orange County.

6 So, with that, I'll wrap up, and in 20 minutes, and
7 certainly be happy to take any questions.

8 UNIDENTIFIED SPEAKER: What was the website for the
9 draft bill?

10 MR. BEVC: Yes. The website for the House of
11 Representatives is www.house.gov, and you'll see a link
12 to the Appropriations Committee that will take you to,
13 I'm sure, the biggest headline on the page, which is the
14 stimulus bill.

15 MR. LEWIS: The 100 jobs in wind energy that are
16 here in Orlando, what kind of jobs are those?

17 MR. BEVC: Those are all -- well, they're all
18 professional, engineering people and --

19 MR. LEWIS: Design?

20 MR. BEVC: Yes, design. There are some purchasing
21 managers and procurement people, but pretty much it's --
22 you know, it's high tech, white collar jobs.

23 MR. LEWIS: If you are looking at the Siemens
24 venture funds, I mean, would you encourage some of our
25 Cleantech start ups that have received some annual

1 funding to look at the Siemens venture funds as a
2 possibility?

3 MR. BEVC: Certainly. The -- other than the name
4 Siemens in front of it, it is like any other venture
5 capital company. It's interested in investing in
6 ventures that show promise. The two things that are
7 different are, first of all, that it is focused
8 typically on products that compliment Siemens' existing
9 businesses. And, again, everything from hearing aids to
10 gigantic wind turbines and that kind of stuff. So it's
11 a very broad spectrum. And, secondly, our tolerance
12 because it's part of a -- you know, a hundred billion
13 dollars a year company is a little bit longer in terms
14 of the payoffs that are in our --

15 MR. LEWIS: Is there a preference for companies and
16 communities where Siemens has a presence?

17 MR. BEVC: No, I don't think I can say that. I
18 think basically it's what the innovator's bringing to
19 the party. That's of most importance. And where they
20 are situated in their particular market. You know,
21 their market opportunities.

22 MR. LEWIS: It's an opportunity.

23 MR. BEVC: Sure.

24 UNIDENTIFIED SPEAKER: I can't quite hear the
25 question, so if I'm repeating, I apologize, but as far

1 as women and minority owned businesses, are there
2 special opportunities for those types of businesses in
3 this environment?

4 MR. BEVC: I guess, yes, there are. Let me repeat
5 the question first since, as you said, it's very
6 difficult to hear the question. And I think it was, are
7 there opportunities for women and minority owned
8 businesses in general. In terms of venture capital, I
9 think it's another criteria, but I wouldn't say that
10 there is really any particular preference. Certainly,
11 Siemens here in Orlando is sort of like a United Nations
12 relative to our makeup of employees and staff and those
13 kind of things. I think typically we are towards the
14 high end of the list in Orlando relative to good places
15 for family members to work and that kind of stuff. We
16 certainly encourage women and minority owned businesses
17 to, let's say, try to supply to our company relative to
18 sourcing and things like that.

19 Any other questions?

20 MS. CHADWICK: I'm going to move on. Frank will be
21 here afterwards if anybody wants to chat.

22 Okay. Next up, we have Jim Williams with
23 Mitsubishi Power Systems America. Mr. Williams is a
24 vice present responsible for the service, repair and
25 manufacturing operations of the power generation service

1 division of Mitsubishi Power Systems headquartered here
2 in Central Florida. His role is that of operational
3 oversight of the field service, repair and manufacturing
4 product lines for all Mitsubishi turbine generator
5 equipment throughout the western hemisphere. With that,
6 Mr. Williams.

7 MR. WILLIAMS: All right. Thank you, Kirstie.

8 Mitsubishi. Most of you, when you hear that word,
9 you probably think of, what, automobiles, plasma
10 screens, whatever. Mitsu actually means three, bishi
11 means diamonds. That's the logo, three diamonds, and
12 it's actually used by about 40 companies worldwide.
13 They each have their own balance sheet, so each of them
14 is autonomous, if you would. A few of us will
15 collaborate, but Mitsubishi Power Systems America, we're
16 part of a larger segment called Mitsubishi Heavy
17 Industries, MHI. Some of you have heard of that.
18 Apologize for my voice, by the way. A little too much
19 motorcycle riding in cold weather. But lots better than
20 folks up north have it right now.

21 MHI is pretty diverse. We started a ship building
22 corporation about a hundred years ago, a little over
23 that. Today, we're about 32 billion dollars in sales
24 revenue annually worldwide. Many segments of us still
25 continue with ship building, continue with

1 transportation, the heavy structures, bridges and so
2 forth, as well as aerospace support and power
3 generation. Power generation is the segment that we are
4 a wholly owned subsidiary of. In our power generation
5 segment, we design and manufacture and service most of
6 the components that we've talked about today, including
7 the coal fired boilers that we've talked about.
8 Nuclear, both primary and secondary site components, the
9 steam turbine generators, much of the equipment that
10 goes along with those power plants, and including the
11 installation of those in many parts of the world. And
12 as the market has changed globally, we've expanded our
13 product line. We have in this business segment for us
14 about 5,000 employees in our R&D group. They're seeking
15 to both improve the existing products that we offer and
16 develop other new ones, such as the renewable ones that
17 we'll talk about in a few minutes. As a result also,
18 we've already mentioned what's going on in Asia and
19 India. There's a lot of growth in those areas. We are
20 still, you know, selling, manufacturing and improving
21 the design on the coal fired boilers, for example, but
22 we don't see much of that market here in this
23 hemisphere. So much of that manufacturing space we've
24 converted to wind. In fact, when I started eight years
25 ago, the boiler facility there is a good segment of what

1 I toured eight years ago, I toured last spring, has
2 already been converted over to wind turbine cell
3 assembly. In fact, we anticipate that by 2012 about 30
4 percent of our portfolio will then be renewables. So
5 that's a big change for us, but we're trying to keep up
6 with what we believe the global market's going to be
7 driving.

8 In the United States, Mitsubishi Power Systems
9 Americas, we are a wholly owned subsidiary of MHI. I
10 first met John about 2001. I think there were eight of
11 us. So we're up to about 600 actually here in Orlando
12 now and about a thousand here in the U.S. We're
13 responsible for the sales, the service, the maintaining
14 of our customers' fleet here in this hemisphere. To
15 give an idea, I've got a team in Nova Scotia working
16 today, poor guys, and I got a team in South America. So
17 we pretty much cover this hemisphere, although the
18 lion's share of our work and service of our products is
19 in the United States and Mexico. That goes from not
20 just the conventional fired boiler turbine generators,
21 but we do have geothermal units, we have hydro units, we
22 have a fairly large market of gas turbines, and then we
23 also support many of the renewables that we'll be
24 talking about here in a minute.

25 I'm responsible for the facility in Orlando. Like

1 to invite you all to come visit us anytime. We'll talk
2 about the PV cells we'll be putting on top of that.
3 Like Jim said, that surface area is free to me. I got
4 all that service area, and just like in your home, I can
5 reduce my five megawatts of usage in the summertime,
6 three megawatts in the wintertime. Even though it's a
7 small chunk of that, same benefit to me, cost effective
8 production of our product.

9 UNIDENTIFIED SPEAKER: Is that the Orlando Central
10 Park?

11 MR. WILLIAMS: It's Orlando Central Park. The
12 headquarters is located in Lake Mary. That's where our
13 financial group is, our projects group, our legal team.
14 We've got about 115 people there, I think, and the
15 remainder of us here in Orlando and Orlando Central
16 Park. And we've built out that second facility now. We
17 dedicated it last summer, so that site's pretty much
18 built out. We've got a little bit more room. We're
19 actually looking at some other types of generation we
20 might put there so we can take advantage of the
21 opportunity to lower that bill. 13 cents per kilowatt
22 hour we've got to.

23 We do have some other facilities in the United
24 States. We have a joint venture with Vientech in
25 Juarez, and like was mentioned earlier, the biggest

1 issue you've got with the wind turbines is
2 transportation. These things, the rotor diameter of
3 these things are a football field. The towers, you
4 start looking at things that are in hundreds of meters,
5 or nineties of meters, the transportation is an issue.
6 So you want to have to be in a position that you
7 manufacture and prepare those near where the source is
8 going to be. We are also looking at sites to have the
9 tower manufacturing done there in the central portion of
10 the United States. And just like we were talking
11 earlier, you know, Mr. Pickens is looking at sections of
12 land out there that's required. If you start looking at
13 a thousand megawatts or more, a lot of property out
14 there. It's pretty easy to get to there in Texas if
15 you're starting out nearby. Not as easy to get to if
16 you're in British Columbia, for example. So we're
17 looking at a site in the central states for that.

18 We do have our sales offices, and actually because
19 of the majority of our renewable products for wind
20 turbines is the west coast, our headquarters for our
21 renewables is in New Port Beach. That's where the
22 support team for the installation, the supply chain,
23 which, the biggest part of this for anybody is the
24 supply chain for the procurement team and all, is out
25 there, as well as the service team located.

1 I think all of us realize that where we're at
2 today, I think about 50 percent of our power is
3 currently generated by not just fossil fuels, coal. And
4 we need to have a transition to get to where we're at to
5 where we want to be. There's a number of ways to get
6 there, and we offer some of those products, but it's not
7 going to happen overnight. A lot of folks have heard
8 about, you know, IGCC's, coal gasification, integrated
9 gasification products, and we do have one that's been
10 operating in Japan since about 2007. It's a great
11 product. Basically eliminates the CO2 emissions, so it
12 takes you from that boiler turbine generator to a much
13 cleaner operation. But what's it produce. Now you've
14 captured the CO2, what do you do with that. Most of us
15 have heard there is some projects even here in Florida
16 that have been -- that have been considered, but until
17 there's a viable way to sequester that carbon, it's
18 probably not going to happen overnight. It's not going
19 to happen next year. I think it will happen, but, you
20 know, you go to symposiums for other segments of the
21 power industry, I was talking to some folks today. You
22 got American Nuclear Society, you got other coal
23 generation societies. You go to those and you see
24 proposed solutions that look much like the
25 infrastructure for our natural gas pipelines. I don't

1 see that happening overnight for a long time. So once
2 that's developed, I think these products will come
3 around. It's very efficient and it permits us to
4 utilize that resource for a while, but I don't see that
5 happening for awhile. And we offer that, we do have
6 that as a product that we discuss globally, but we don't
7 have any here in the United States as yet that someone's
8 come up to purchase.

9 The second aspect of that is I think also most of
10 us realize that, unfortunately, back in the '70's and
11 '80's, most of the steel mill iron works production in
12 this country went away. Especially the large ones. And
13 it's coming back. It's trying to come back, and it
14 needs to come back. That drives a lot of this industry,
15 and if we think we've got some issues with the fuel
16 consumption globally, we need to look at the steel
17 consumption, so forth, to go global in China and India.
18 With that, there is an opportunity now to use a blast
19 furnace gas that is a by-product. That product not only
20 helps their process be more efficient, but it's being
21 utilized to again make a very cost effective method for
22 generating power. That takes that technology down 22
23 percent to get you to the next step cleaner. Probably
24 won't get you all the way there, but it's a step in the
25 right direction. This is being considered. We've been

1 utilizing it globally for a number of years. We do have
2 a few customers that are considering they start up their
3 mill again applying this technology up in the Great Lake
4 states.

5 We do have a solid oxide fuel cell and it is a
6 product that we have a micro turbine attached to in
7 2006. It's -- the opportunity here is it gives you
8 about a 50 percent efficiency right off the bat. You
9 think about how these other products, it took us awhile
10 to get there, that's a good starting point. We have a
11 model that we're putting in place to get us up to about
12 a 275 kilowatt model. That's still very small, but it's
13 a product that we've gotten that we're working with at
14 this time.

15 Let's talk about the renewables. Again, I think I
16 mentioned that we anticipate 30 percent of our portfolio
17 in this market to be in this market by 2012. We sold
18 our first wind turbine here in the United States in the
19 '80's, and as we've already heard, most of those farms
20 are out west. But they continue to grow and we've been
21 very successful in that that was our largest growing
22 product line the last two years. These wind turbines
23 give us an opportunity for our current land base
24 turbines, about 2.4 megawatts, and most of those cells
25 are assembled in Japan, and the blades and the towers

1 here in the U.S. We hope to be assembling those as
2 cells, but just like we talked earlier with the economic
3 situation in the last quarter, we've got not only rate
4 tariff issues, now we've got to look at the folks that
5 are investing in this. I hope that it continues on
6 because right now that's been one issue is that the
7 sovereignty of the investors that we've got. Even
8 though this is still a good investment, we've got some
9 concern about some of those investors being able to live
10 through this market with their other investments. So
11 that's something to be looking at. This economy's going
12 to drive not just this product, but all these folks that
13 have multiple investments around, they're going to be
14 watching this for a while, and we've seen, like everyone
15 else, not necessarily a slow down, but they're much less
16 aggressive than they were. This used to be a product
17 that, if you had it, you could sell it. Now it's a
18 product that folks are being a little less aggressive
19 with. And still a very good 2.4 megawatts is ours on
20 the land base, and as we've already said, this is -- the
21 2.4 megawatt one is about a football field in diameter,
22 and by 2012, that's probably the only product we'll be
23 selling here in the United States. The one megawatts
24 have been going very well, but, again, the larger fields
25 are probably going to be a little bit smaller, and they

1 can be smaller with two and a half megawatts, but with
2 our experience with both the ship building and the super
3 structures and bridge structures, the five megawatt
4 offshore looks to be the next opportunity for us.
5 Europe's already had it. We've already talked about the
6 folks in the North Sea and all that applies those.
7 There is an opportunity to have these offshore, and the
8 five megawatt gives us a little bit of complexity that
9 we can put the product and, again, have that perhaps
10 even manufactured here in the southeast.

11 Talked to a number of folks today already about
12 PV's when we came in, and I will mention in a minute, we
13 will be putting those on our facility here later this
14 year. But we're seeing a move away from the crystalline
15 to the thin film. The thin film is what we will be
16 putting on, this product, at our facility, and if the
17 market continues to go as it should, it's probably the
18 next product we will integrate in the manufacture here
19 in the U.S. Thin film is more cost effective. It gives
20 us a better efficient product, and it's turned around
21 pretty well for us. So hopefully by the end of this
22 year, we will have about 200 kilowatts on our facility.
23 Where have we put the thin film? Again, already been
24 mentioned. Germany was the first place outside of
25 Japan. Greece, Italy and Spain. So there's an

1 opportunity there because we've already discussed why
2 were those the first locations for those. It's the
3 policy. It's a benefit to do that. It's not going to
4 be easy for the first guys to get through that and start
5 looking at return on investment. You've got to get
6 creative, but if you've got something helping you with
7 that, it's going to happen fairly quickly. That's the
8 first ones we've had in operation were actually in
9 Germany. Our facility here in Orlando Central Park is
10 probably getting actually a little better than 200
11 kilowatts. Again, in summertime, at the control
12 facility, I've got 550 people manufacturing. We've got
13 vacuum presses, we have robots. We use about five
14 megawatts in the summertime. That may sound like a very
15 small piece, but it's a start. And it's a start just
16 like we've talked about green, we incorporate lead
17 compliance, green -- I will have, we hope we will have
18 electric powered fork trucks as soon as they're
19 completed by our Mitsubishi works for that also. So
20 every little piece helps us with our cost. The
21 intention is to have this operational by this time next
22 year. And, again, that's our first step at this
23 facility. Then we'll look at expanding. We have
24 another 100,000 square foot of roof on the other
25 building. See how that one goes.

1 Haven't talked much about it today, but if you
2 think about it, here in Florida as well as many of these
3 locations, solar's great during the day. The wind --
4 most of the places that we need the wind turbines, the
5 wind is maybe a little stronger at night. The energy
6 storage and the battery storage is going to be critical
7 to this mix as we go forward. We've got both the
8 stationary cell and then a cell for the vehicles. And,
9 in fact, in Japan already, they're utilizing these cells
10 in prototype cars and buses for transportation. We know
11 that the trains have already been electrified for a long
12 time. This is important because it gives us an
13 opportunity to utilize renewables 24 hours a day. It's
14 also going to be very important as we look at what
15 changes to the demand. You know, this is going to be
16 something that folks are plugging their cars in at
17 night. If it's managed properly, it's either going to
18 create a real hassle or it's going to be an opportunity
19 for us to utilize that to help out the overall energy
20 system and grid as we go through. So we do have
21 products that we're testing for that. We've got several
22 of them in California and Texas right now, the
23 stationary. And pretty much like you'd expect for the
24 car, the package is about the size of a small gas can,
25 if you would, packaged together for that.

1 I mentioned that most of the Mitsubishi
2 corporations are autonomous. Well, actually MHI and
3 Mitsubishi Automotive are -- or Mitsubishi Automotive
4 does have MHI as a partial owner for this reason. The
5 development has been going on for a few years. If
6 you've ever been to Japan, it's one of the best
7 international trips you'll ever make. There will be
8 electric cars there. There is no doubt they're going to
9 be in that mode pretty quick. They're going to have to.

10 So what's the future energy network going to look
11 like? It's not going to be cutting a switch on and off
12 and getting completely there with all the renewables
13 we're talking about, but there's a lot we can do to
14 improve the efficiency and improve the existing systems,
15 replace them, perhaps, with some IGCC's, improve them
16 with some very high efficiency cycle utilization, use
17 the renewable energies and the storage of that, as well
18 as when we start moving into the batteries for the
19 vehicles for the trains and for storage units at your
20 home and at offices and businesses to help with the
21 system that we've heard a little bit about, but now the
22 whole grid idea is going to be a whole another
23 discussion that we didn't hear a lot about during the
24 election. The bill has it in there already. Folks
25 realize that that's a big key to this that we have to

1 address.

2 Well, to give you a look in at some of our
3 strategic meetings, not only is the CO2 emissions, you
4 know, the right thing to do, it's going to be the law.
5 I mean, we see that coming. It's going to be the law.
6 And carbon capture, it has to happen for any of these
7 IGCC's or others to be effective. If there is not a way
8 to sequester that, then what are you going to do.
9 You've created another issue that actually builds up
10 fairly quickly. Generation technology, it's going to be
11 a mix. We haven't talked about it today, but if you
12 look at the other -- Japan, if you look at Europe, the
13 other countries in the world, nuclear's going to be in
14 that mix, I think. I think it has to be. And it's
15 probably not going to happen in seven years. Some of us
16 grew up in the '70's and '80's building that. I hope it
17 happens in 10. I think it's more like 12 or 15, but
18 it'll be in that mix, because if it's not in that mix,
19 we're talking about gigawatts of power, not kilowatts.
20 So it's a long way to go. But the renewables play a big
21 piece in that.

22 Grid stabilization. I think we'll hear a lot more
23 about that in the very near future. That's a key piece
24 no matter what the mix of generation technology is.
25 Fossil fuels are finite. We've seen a number of charts

1 mention that today, not only from a actual resource, but
2 is it financially appropriate to go after some of these.
3 We're going to hit that probably in our children's
4 lifetime, some of these. You are exactly right. So
5 there needs to be a move to get away from that necessity
6 now, be it as efficient as possible, find a way to find
7 alternative forms to supplement that generation. And
8 tax credits and subsidies, you know, you got to be
9 profitable to be able to get a benefit from the tax
10 credit. There's a lot of concern with some of these
11 businesses right now that they're going to be able to do
12 that overall. So we have to find a way to get that, and
13 I think there is an opportunity there for this to be a
14 very strong growth in the very near future.

15 Here in Florida, we may as well be an island if you
16 look at it. You say, you know, look at the grid, the
17 way we have to bring our resources in here. There is an
18 opportunity for us if we do go green and grow this the
19 right way to be a leader. But either way, it's going to
20 be a higher kilowatt per hour if we're not careful and
21 we'll just be behind the curve.

22 Pretty good.

23 MS. CHADWICK: You rock.

24 MR. WILLIAMS: I promised her I'd do that. Any
25 questions? Not that I can answer them, but I brought

1 someone with me that might be able to.

2 Any questions?

3 MR. LEWIS: Jim, is most of the Cleantech that
4 happens here in Orlando just through increasing
5 maintenance efficiencies and upgrades to existing power
6 plants?

7 MR. WILLIAMS: We do sell and support all the wind
8 turbines out of here in Orlando. The design and
9 manufacture is done overseas, but the installation and
10 the maintenance of those are done out of here. At the
11 factory that we run here in Orlando, we are -- probably
12 95 percent of that product, the hardware that goes
13 through manufacturing, is for the high efficiency gas
14 turbines at the combined cycles plants, and like we've
15 already mentioned, that's a choice that's been made.
16 That's our primary source here in Florida for power
17 generation. The solar is going to be headquartered out
18 of here. In fact, the project leader is in Lake Mary
19 for the installation of our facility, so the sale and
20 project of that, we're still in discussions where that
21 manufacturing would be. As far as the batteries, that's
22 entirely in the R&D group, still in Japan, although the
23 combination of that would be led out of the sales group
24 in Lake Mary.

25 MR. LEWIS: We'd like to work with you to get the

1 manufacturing here.

2 MR. WILLIAMS: I know you would. You've been -- I
3 know. I've -- like I said, I think seven or eight of us
4 came down here and John -- and, actually, he's not here,
5 Mark Owenstein. In fact, Mark Owenstein, I met him my
6 first week at work. I went and enrolled my kids at
7 school and Mrs. Owenstein was his elementary school
8 teacher. Went over and enrolled my daughter at the high
9 school and Mrs. Owenstein's mom was there. I thought it
10 was kind of like, you know, the Kennedys or something.
11 What is this family doing here.

12 So anything else?

13 Yes.

14 MR. SNAITH: And this could go to any three of our
15 speakers. The amount of money that's being laid out in
16 these early versions of this stimulus bill as far as the
17 grid's concerned, I mean, is the appropriation -- are
18 the amounts sufficient enough to do what we need to do
19 to the grid given its age and the problems that exist?

20 MR. WILLIAMS: We probably got -- I can give you my
21 opinion, but I doubt it. That's just my opinion, but
22 these two guys over here are more versed than me. The
23 good news is one of the first ones around. The bad news
24 is one of the first ones around. And we've patched
25 things up, but I doubt it. You guys can comment on

1 that.

2 MR. FENTON: Just as I mentioned, for 7 billion
3 dollars for a nuclear power plant, we're going to spend
4 3 billion dollars for the wires, okay? So that just
5 gives you the context that we're at. The wires cost a
6 lot of money.

7 MR. WILLIAMS: But it's a start. I mean, we
8 haven't heard much near the attention that it got. I
9 mean, T-Bone Pickens didn't have a commercial about the
10 grid. You know, he came on talking about sections of
11 land. So it's getting attention. So that's a good
12 start. I mean, it's like the 200 kilowatts of PV's on
13 our -- it's a start. You know, it's not going to make
14 -- I got another 4 and three-quarters megawatts to go,
15 but it's a start. So we got to take little steps and
16 get moving on it.

17 MR. BRUDERLY: T-Bone Pickens is about the only guy
18 in the gas industry that's talking about changing the
19 paradigm, and you guys are in gasification business. If
20 you're going to decarbonize fossil fuels, you can only
21 do that where you have geology that allows you to do
22 carbon sequestration. So what about integrating the
23 natural gas pipeline infrastructure into this smart grid
24 so that you have an integrated energy system that will
25 go to zero energy carbon carriers in the long term and

1 get a plan in place, a policy analysis in place, to see
2 if that is the way we want to go. If we're going to
3 spend 3 billion dollars of public money on a smart grid,
4 would we not also want to look at the natural gas
5 pipeline infrastructure and see if you can put hydrogen
6 in that pipeline and ship us clean energy rather than
7 carbon?

8 MR. WILLIAMS: Right. You got a great point there.
9 That's exactly it is that the attention -- the carbon
10 can be captured. What do you do with it? And I don't
11 see the attention being given yet to where that process
12 is going to be. The alternative to go with that
13 probably will be getting more attention as it comes up
14 now, but right now, I don't have an answer for that.

15 UNIDENTIFIED SPEAKER: You showed a slide of a
16 gasification plant in Japan, and what I'm wondering is,
17 are you sequestering CO2 there?

18 MR. WILLIAMS: Yes, they are, and, no, I have no
19 earthly idea what they're doing with all of it. I
20 should find out, but I don't know. But, yes, they are.

21 MS. CHADWICK: I want everybody to look at that
22 there clock. It says 11:15. That's the time we're
23 supposed to end. I want to thank everybody for coming
24 out today again. As was mentioned earlier, our next
25 symposium is on February 18th. It will require

1 participation from you next time, and so this time I
2 hope you enjoyed the cupcakes. Next time, you are going
3 to be part of the process.

4 John, do you have any other comments?

5 MR. LEWIS: No. Just thank you all so much for
6 coming today and coming to the first symposium, and hope
7 you all mark February the 18th on your calendars for the
8 third symposium, and with any luck we'll have the
9 director of the San Diego Cleantech Initiative here with
10 us to share with everyone the Cleantech story, the San
11 Diego Cleantech story, what we can learn from them.

12 One thing I do want to mention is that when I held
13 up the Cleantech study from San Diego and mentioned that
14 other communities are doing these Cleantech studies,
15 we're a step behind, but I think Orlando has
16 demonstrated in the past that sometimes we start a step
17 behind but we end up a couple steps ahead. About eight
18 years or so ago, the Central Florida Technology
19 Incubator was just a fledgling start up. In 2004, it
20 was the No. 1 incubator in the United States by the
21 National Incubator Administration. There is an advisory
22 board council that was developed by the Small Business
23 Development Center here after we started that, after the
24 downturn of the economy following the September 11,
25 2001. Other communities, Cleveland, for example,

1 already had advisory board councils. By the mid 2000's,
2 our advisory board council program was selected as the
3 No. 1 program in the world, business development program
4 in the world, by the International Economic Development
5 Council. When we started, some of you may remember the
6 Angelo studies. He's a consultant out of Austin. And
7 Orange County, the City of Orlando, and the EEC worked
8 together to develop a high technology strategy. We
9 didn't -- high tech was not really an integral part of
10 our economic development strategy at that time. In
11 2008, Fast Company magazine identified Orlando as one of
12 the 12 best places in the world for innovation. So we
13 can do this. Don't read too much into that when I hold
14 up all these other things that other communities are
15 doing and get the impression that we're not going to be
16 able to catch up, because I think we can, especially
17 with all of you participating in this.

18 So thanks for coming today.

19 MS. CHADWICK: Thank you very much. See you guys
20 next month.

21 (Symposium ended at 11:18 a.m.)

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CERTIFICATE OF REPORTER

STATE OF FLORIDA
COUNTY OF ORANGE

I, Leslie Richmond, Registered Professional Reporter, certify that I was authorized to and did stenographically report the foregoing proceedings, and that the foregoing transcript, including 114 pages, is a true and complete record of my stenographic notes.

Dated this 7th day of February, 2009.

Leslie Richmond, RPR and
Notary Public

(This signature is valid only if signed in blue ink.)

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