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U.S. ENERGY ABUNDANCE: MANUFACTURING COMPETITIVENESS AND AMERICA'S ENERGY ADVANTAGE

JOINT HEARING

BEFORE THE

SUBCOMMITTEE ON ENERGY AND POWER

AND THE

SUBCOMMITTEE ON COMMERCE, MANUFACTURING, AND TRADE

OF THE

COMMITTEE ON ENERGY AND COMMERCE
HOUSE OF REPRESENTATIVES

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U.S. ENERGY ABUNDANCE: MANUFACTURING COMPETITIVENESS AND AMERICA'S ENERGY ADVANTAGE

THURSDAY, JUNE 20, 2013

HOUSE OF REPRESENTATIVES,
SUBCOMMITTEE ON ENERGY AND POWER,
JOINT WITH THE
SUBCOMMITTEE ON COMMERCE, MANUFACTURING, AND TRADE,
COMMITTEE ON ENERGY AND COMMERCE
Washington, DC.

The subcommittees met, pursuant to call, at 11:27 a.m., in room 2123, Rayburn House Office Building, Hon. Ed Whitfield (chairman of the subcommittee) presiding.

Present from the Subcommittee on Energy and Power: Representatives Whitfield, Scalise, Shimkus, Terry, Cassidy, Olson, McKinley, Gardner, Kinainger, Griffith, Rush, McNerney, Tonko, Green, Matsui, and Waxman (ex officio).

Present from the Subcommittee on Commerce, Manufacturing and Trade: Representatives Terry, Lance, Guthrie, Olson, McKinley, Kinzinger, Bilirakis, Johnson, Schakowsky, Sarbanes, McNerney, Rush, Barro, and Waxman (ex officio).

Staff Present: Charlotte Baker, Press Secretary; Matt Bravo, Professional Staff member; Allison Busbee, Policy Coordinator, Energy & Power; Tom Hassenboehler, Chief Counsel, Energy & Power; Kirby Howard, Legislative Clerk; Jason Knox, Counsel, Energy & Power; Nick Magallanes, Policy Coordinator, CMT; Brian McCullough, Senior Professional Staff Member, CMT; Brandon Mooney, Professional Staff Member; Gib Mullan, Chief Counsel, CMT; Andrew Powaleny, Deputy Press Secretary; Shannon Taylor Weinberg, Counsel CMT; Michelle Ash, Minority Chief counsel, Commerce, Manufacturing and Trade; Alison Cassady, Minority Senior Professional Staff Member; Caitlin Haberman, Minority Policy Analyst; and Bruce Ho, Minority Counsel.

Mr. WHITFIELD. I would like to call this hearing to order, and certainly want to thank those of you who are serving as our witnesses today. And I do apologize that we are, I guess, over an hour and a half late, or close to it, so thank you for your patience.

And as you know, we do have difficulty with controlling time up here, and we were voting on the floor. So we do value your being here, and we look forward to your testimony on this important subject.

Today's hearing is entitled, "U.S. Energy Abundance: Manufacturing Competitiveness and America's Energy Advantage."

So I know that this is going to be extremely disappointing for you all, and I am sorry to say this, but we are not going to have any opening statements up here. So we are going to go right directly to you and listen to your opening statements. So each one of you will be given 5 minutes.

And this is a joint hearing. Mr. Terry and I are both—our committees are hosting this hearing, our subcommittees.

STATEMENTS OF PAUL CICIO, PRESIDENT, INDUSTRIAL ENERGY CONSUMERS OF AMERICA; DEAN CORDLE, PRESIDENT AND CEO, AC&S INCORPORATED; PHYLLIS CUTTINO, DIRECTOR, CLEAN ENERGY PROGRAM, THE PEW CHARITABLE TRUSTS; DREW GREENBLATT, PRESIDENT, MARLIN STEEL WIRE PRODUCTS; AND ANDRE DE RUYTER, SENIOR GROUP EXECUTIVE, SASOL LIMITED

Mr. WHITFIELD. So Mr. Cicio, we will go with you. You are recognized for 5 minutes for an opening statement.

STATEMENT OF PAUL CICIO

Mr. CICIO. Thank you, chairmen Whitfield and Terry, Ranking Members Rush and Schakowsky. Thank you for the opportunity to be here.

The shale gas revolution and lower natural gas and feed stock costs have launched the start of the manufacturing renaissance with announced manufacturing investments of over $110 billion. This is the first wave of investment. The second wave will be from our downstream customers who will relocate to be near their suppliers and reduce their costs. The Boston Consulting Group estimates that 5 million new jobs will be created in manufacturing by 2020. Every dollar's worth of natural gas run through our manufacturing economy creates up to $8 in added value. This is a superior economic use of natural gas than exporting LNG.

The $110 billion investment will also create new natural gas demand between 7 and 9 Bcf a day, about an 11 percent increase. This is all good news.

The most significant threat to the fulfillment of the manufacturing renaissance will be determined by the speed of LNG export terminal approvals and the volume of its shipments, which brings me to the key points of my testimony.

Doing it right can be a win-win for producers and consumers of natural gas. Doing it wrong will result in spiking natural gas and electricity prices and an end to the manufacturing renaissance. We need to avoid what happened in Australia.

IECA is not opposed to LNG exports but warns policymakers that careless due diligence by the DOE on the public interest determination of LNG export applications to non-free-trade countries is a real concern. LNG terminal approvals are for 30 years. A lot can happen in 30 years.

In this regard, we are asking members of these two committees to support your natural gas consumer constituents back home by urging the DOE to do a rulemaking to establish transparent criteria for decision-making for LNG export facilities. The public

trust—just as the DOE did as they dealt with LNG imports a decade ago.

Domestic demand is accelerating and LNG export demand is additive to that demand. For example, just six of the most likely export terminals would increase demand by 16 percent. The export demand would be on top of the AEO 2013 demand increase of 6 percent by 2020. Neither demand number includes the manufacturing renaissance of an 11 percent demand. Combined, this is a 33 percent increase. This is a huge increase in a very short time frame, and this does not include new demand that will occur from the EPA's utility mat and EPA's greenhouse gas regulations.

The public interest determination for approval of LNG exports to non-free-trade countries is the law. The public interest test is really important, because it is a safeguard to ensure that decisions are being made correctly and with up-to-date information.

The responsibility for review of LNG export applications resides with the Department of Energy. In this regard, the DOE decision raises questions. On May 17th, in our opinion, the DOE failed in their judiciary responsibility under the Natural Gas Act in the implementation of the public interest determination for the Freeport facility. DOE cites three studies in approving the Freeport LNG export facility. All three use demand assumptions that are 2 and a half years old.

However, we do agree with the comments in the conclusion portion of the approval. This is a quote: "The reasons in support of proceeding cautiously are several. Number one, the LNG export study, like any study based on assumptions and economic projections, is inherently limited in its predictive accuracy. Number two, applications to export significant quantities of domestically produced LNG are a new phenomenon with uncertain impacts. And number three, the market for natural gas has experienced rapid reversals in the past and is again changing rapidly due to economic, technological and regulatory developments. The market of the future very likely will not resemble the market of today," unquote.

Mr. Chairman, no one in your congressional district wants higher natural gas and electricity prices. We ask for your help in this matter.

Lastly, decisions on LNG export applications need to be done on a case-by-case basis and sequenced to avoid price spikes. These are not unreasonable requests. Thank you.

Mr. WHITFIELD. Mr. Cicio, thank you.

And I neglected to say who Mr. Cicio is, but he is the president of the Industrial Energy Consumers of America.

And we thank you for your testimony.

[The prepared statement of Mr. Cicio follows:]

"A Competitive Edge for American Manufacturing: Abundant American Energy"

Before the House Committee on Energy and Commerce, Subcommittees on Energy and Power, and Commerce, Manufacturing and Trade

Thursday, June 20, 2013

Testimony of

Paul N. Cicio

President

Industrial Energy Consumers of America

THE PUBLIC INTEREST DETERMINATION FOR EXPORTS OF LNG TO NON-FREE TRADE COUNTRIES IS THE LAW, AND ITS IMPLEMENETATION BY DOE DIRECTLY IMPACTS THE FUTURE OF THE U.S. MANUFACTURING RENAISSANCE

Chairmans Whitfield and Terry, and Ranking Members Rush and Butterfield, thank you for the opportunity to testify before you today. My name is Paul N. Cicio, and I am the President of the Industrial Energy Consumers of America (IECA).

The Industrial Energy Consumers of America is a nonpartisan association of leading manufacturing companies with $1.3 trillion in annual sales, over 1,500 facilities nationwide, and with more than 1.7 million employees worldwide. It is an organization created to promote the interests of manufacturing companies through advocacy and collaboration for which the availability, use and cost of energy, power or feedstock play a significant role in their ability to compete in domestic and world markets.

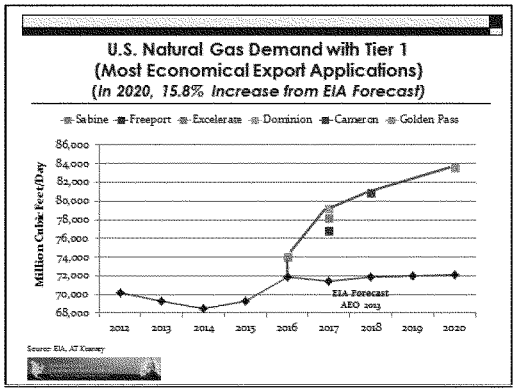
IECA companies are mostly energy-intensive trade-exposed industries. They produce the "building block" products that are used by essentially "all" other manufacturers to produce their products. Almost everything we consume as a nation uses these energy-intensive products. Examples include: chemicals, plastics, iron and steel, aluminum, fertilizer, paper, cement, industrial gases and glass.

If the U.S. desires to have a robust manufacturing sector and to increase value-added exports, these basic industries are essential to accomplish the goal. Otherwise, these products will be imported and the jobs will reside overseas.

KEY POINTS

1. **IECA is not opposed to LNG exports but warns policymakers that careless due diligence by DOE on the "public interest determination" and approval of LNG export applications to non-free trade countries, can be a major threat to the continued growth of the manufacturing renaissance. Even relatively few LNG export terminals can have signifcant negative impacts to the economy.**

The chart below illustrates a scenario of LNG export demand for what industry consultants believe are six of the most economical, or likely export terminals and the timing of when they would begin to ship if approved near-term. In 2020, these six terminals would increase demand by approximately 15.8 percent above the AEO 2013. The export demand would be on top of the AEO 2013 demand increase of 6 percent from 2012 to 2020.



2. **The "public interest determination" for the approval of LNG exports to non-free trade countries is the law. The public interest test is really important because it is a safe-guard to ensure that decisions are being made correctly and with up-to-date information. It is important for policymakers to understand that there are reasons why the U.S. does not have free trade argeements with major LNG importing countries – they do not want free trade. They often discriminate against U.S. manufacturing goods.**

3. **The responsibility for review of LNG export applications resides in the U.S. Department of Energy (DOE), and they have failed in their fiduciary responsibility under the Natural Gas Act in the implementation of the "public interest determination" for consideration of the conditional approval of the Freeport LNG Expansion, L.P. and FLNG Liquefaction, LLC (Freeport LNG) for shipments to non-free trade countries.**

4. **IECA urges the Congress to provide greater oversight and encourage the DOE to complete a rulemaking to develop transparent criteria for the "public interest determination," with public input on which to make decisions regarding LNG export applications. Decisions on LNG export applications need to done on a case-by-case basis and sequenced to avoid price spikes and give producers time to increase production. Doing it right can be a win-win. Doing it wrong will be a win for exporters of LNG and their overseas customers, and a terrible economic loss for all domestic consumers and manufacturers.**

TESTIMONY

The rule of law does matter. And, impacts of LNG exports to U.S. natural gas and electricity prices for homeowners and manufacturers, investment, job growth and exports of manufactured goods – do matter. The U.S. is at the early stage of considering a long list of LNG export applications, and this is too important to not adhere to the statutes that are specifically designed to protect the interests of the public.

Among other things, there are at least three unique dimensions of LNG exports that set this issue apart as a vital public policy issue which should give Congress pause and careful oversight as our public officials with jurisdiction.

First, when DOE approves a LNG export terminal, it is for a period of 25 to 30 years. A lot can happen in 30 years that cannot be anticipated today. Caution is needed.

Secondly, natural gas production and consumption is greatly impacted by public policy decisions and regulations. Importantly, every potential public policy decision that is discussed today would have the effect of lowering production or making it more expensive. On demand, every potential public policy discussed would have the effect of increasing – not decreasing – domestic demand for natural gas. Of particular concern is new and potential EPA regulations that drive coal from use in the power and industrial sector, and EPA regulation of GHGs for all sectors of the economy. We cannot say enough how important it is to keep coal, an abundant, reliable and low-cost source of energy in the mix. This will ensure that electricity prices stay reasonable over the long-term. Consumers need coal in the mix to compete with natural gas.

These public policy decisions will impact supply and demand, and will result in increased natural gas and electricity costs that will directly and greatly impact the competitiveness of the manufacturing sector, and the attractiveness to invest and create jobs in the U.S.

Thirdly, unlike most other export products, what happens to the price of natural gas impacts home consumers and manufacturers alike. Just a one cent per million cubic feet increase in natural gas prices costs consumers $250,000,000. The impact to electricity prices would be additive.

The responsibility for review of LNG export applications resides in the U.S. Department of Energy (DOE), and they have failed in their fiduciary responsibility under the Natural Gas Act in the implementation of the public interest determination for consideration of the conditional approval of the Freeport LNG Expansion, L.P. and FLNG Liquefaction, LLC (Freeport LNG) for shipments to non-free trade countries. The failure by the DOE to establish transparent criteria through a rulemaking process for decision making, and use of up-to-date market assumptions on fundamental elements of the analysis, such as domestic demand and resulting impacts, threatens the future of the manufacturing renaissance if it continues as they consider future export applications.

The carelessness of the conditional approval of the Freeport LNG application is unacceptable. Congress should accept nothing but the best up-to-date analysis of the impact to the economy before considering each LNG export application and, on a case-by-case basis. To this end, we urge the Congress to insist that the DOE conduct a rulemaking to develop a transparent set of criteria with public input as soon as possible.

There is precedence. Over a decade ago, the DOE was confronted with approving "import" facilities, and they wisely implemented a rulemaking that invited public comment. The criteria for exports are extensively more diverse, and have far-reaching negative economic impacts, more so than for imports. Despite the call by consumer groups, such as ourselves, to conduct a rulemaking, the DOE has refused to do so.

To this end, we ask these Committees, why they would not be supportive of asking the DOE to implement such a rulemaking?

To date, DOE has approved two LNG export facilities for shipment to non-free trade countries. The Sabine Pass terminal will increase demand by 2.2 bcf/day, an increase of 3.1 percent. Approval of the Freeport LNG terminal increases demand by 1.4 bcf/day or 2.0 percent. Combined, just these two terminals will increase demand by 5.1 percent as compared to 2012 demand. For perspective, total U.S. demand increased by only 8.8 percent from 2000 to 2012 (a total of 5.8 percent of that total occurred since 2010.)

There are 27 LNG export applications to ship to non-free trade countries. If all were approved, demand would increase by 30.6 bcf/day, a 43.8 percent increase as compared to 2012 demand. (See Appendix)

The DOE May 17, 2013 conditional approval of the Freeport LNG facility cites three reports, all of which use assumptions from the Energy Information Administration (EIA) AEO 2011. In 2010, as the EIA contemplated the AEO 2011 forecast, they had no idea of the $110 billion of new capital investment that would be announced by natural gas and feedstock intensive manufacturing industries. (See Appendix) **The announced new or expanded facilities will increase natural gas demand between 7 and 9 bcf/ day, an 11 percent increase in U.S. demand.** However, as they made the decision on May 17,

2013, DOE was fully aware of this new increasing demand and failed to consider these and other assumptions.

As a result, they also failed to factor in the job creation from the manufacturing renaissance. The Boston Consulting Group estimates that 5 million new jobs will be created in U.S. manufacturing by 2020. Every dollar's worth of natural gas run through our manufacturing economy creates up to $8 in added value. In some segments, the value-add is more than 20 times.

And, there is new announcements every month that are predicated on the assumption of an abundant low-cost supply of natural gas. Soon, there will be the second wave of investment by the downstream customers of these energy-intensive commodity products.

Below is a series of charts that raise serious questions as to why the DOE's decision on Freeport LNG was not made using the most up-to-date AEO 2013 assumptions, and why DOE failed to consider the new manufacturing renaissance demand.

Congress should note that DOE's use of AEO 2011 assumptions means that the negative impacts to domestic natural gas and electricity prices, jobs, wages, economic growth and investment are under-stated.

CHART 1 – *Illustrates how AEO 2011 a natural gas demand forecast differs from the AEO 2013, the AEO 2013 demand is 3.9 percent higher than AEO 2011*

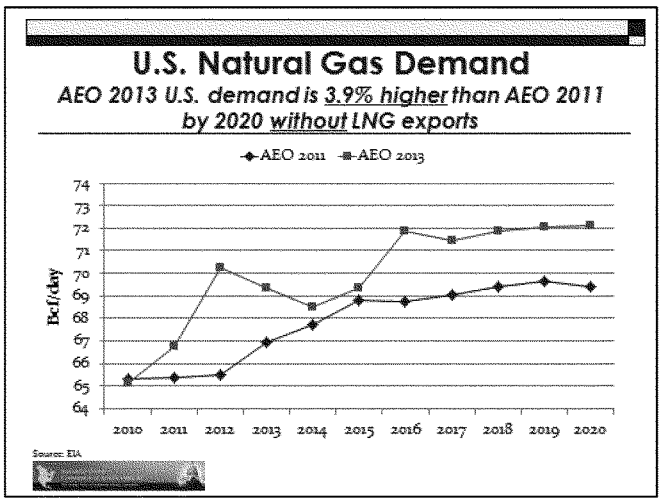


CHART 2 – ***Illustrates the significant industrial renaissance demand as compared to the AEO 2011 assumption used to make the Freeport LNG decision.***

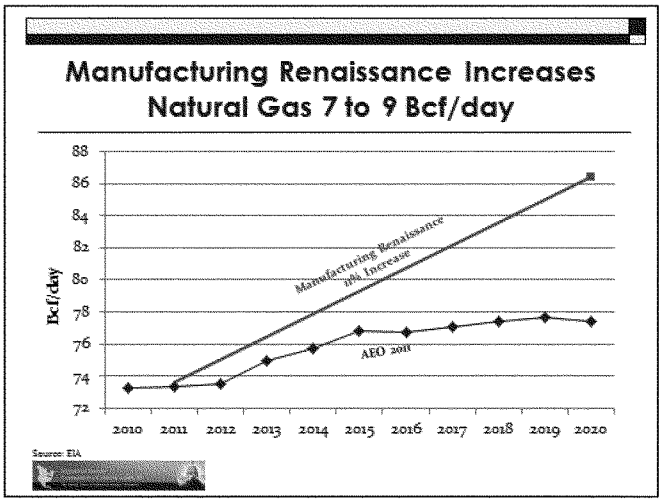


CHART 3 – ***Compares AEO 2011 vs. AEO 2013 industrial demand, a 6.8 percent decrease.***

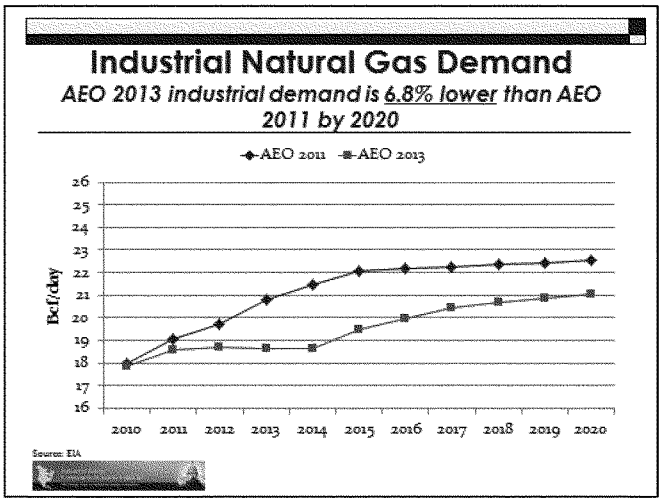


CHART 4 – ***Compares AEO 2011 vs. AEO 2013 electric power demand, a 20.3 percent increase.***

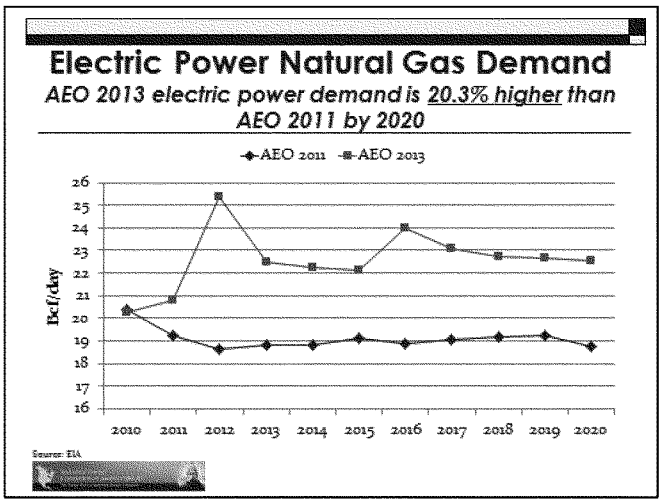
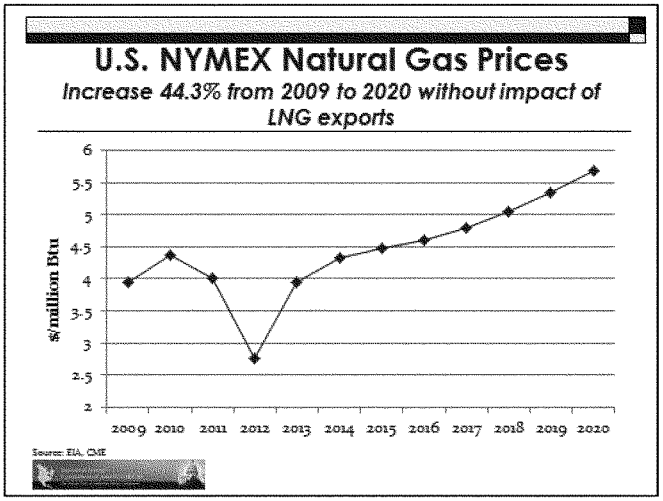


CHART 5 – ***Illustrates that natural gas prices are strongly rebounding even without the impact of the new demand from LNG exports.***



DOE NERA REPORT:
Those who favor approval of all LNG export applications, frequently quote the DOE NERA report and the headline that says exports provide "net economic benefit" to the U.S. Actually, the NERA report is quite damming, particularly when one considers that the study uses under-stated domestic demand that results in under-stated negative impacts to the U.S. economy. The quote below from the NERA report can be found on page 7.

"Expansion of LNG exports has two major effects on income: it raises energy costs and, in the prices, depresses both real wages and the return on capital in all other industries, but it also creates two additional sources of income. First, additional income comes in the form of higher export revenues and wealth transfers from incremental LNG exports at higher prices paid by overseas purchasers."

Secondly, we urge you to look at Figure 3 of the NERA report. The chart describes who benefits and who is hurt from exports. Figure 3 indicates that in 2015 there is a net $10 billion benefit to the U.S. economy. In 2020, there is a $20 billion gain and this steadily decreases each year to about $5 billion in 2035. This is a trivial amount given that the U.S. is a $14 trillion economy.

<u>The Purdue University study explains it this way, "The $10 billion gain (in 2015) in the NERA study amounts to 6 hours of U.S. economic activity."</u>

In closing, we have an abundant supply of energy resources that we should use to our economic benefit. However, policymakers must be aware of energy trade issues, and take necessary precautions on behalf of the domestic consumer. The LNG market is not a free market so long as countries dictate supply and demand, set prices to crude oil, and whereby countries, or agents of countries use country coffers to buy and guarantee their supplies of LNG. Countries will always be able to outbid the U.S. consumer for our natural gas.

Thank you.

APPENDIX

CHART 6 – ***List of $110 billion projects***

Industry to Invest Over $110 Billion In Manufacturing Renaissance				
Chemicals and Fertilizer				
	Company	Location	Date Online	Project Type
1	Dow	St. Charles, LA	2012	Ethylene Restart
2	Dow	Freeport, TX	2017	New Ethylene
3	Westlake	Lake Charles, LA	2012	Ethylene Expansion
4	Williams Olefins	Geismar, LA	2013	Ethylene Expansion
5	INEOS	Chocolate Bayou, TX	2013	Ethylene Debottleneck
6	LyondellBasell	Laporte, TX	2014	Ethylene Expansion
7	Westlake	Lake Charles, LA	2014	Ethylene Expansion
8	Aither Chemicals	WV or PA or OH	2016	New Ethylene
9	Exxon Mobil	Baytown, TX	2016	New Ethylene
10	Chevron Phillips	Baytown, TX	2017	New Ethylene
11	Formosa	Point Comfort, TX	2017	New Ethylene
12	Braskem	WV	2017	New Ethylene
13	Sasol	Lake Charles, LA	2018	New Ethylene
14	Shell	PA	2018	New Ethylene
15	Eastman	Longview, TX	2012	Ethylene/Polypropylene Expansion
16	Indorama	Under Consideration	2018	New Ethylene
17	LyondellBasell	Channleview, TX	NA	Ethylene Expansion
18	Sabic	Under Consideration	NA	New Ethylene
19	Occidental/Mexichem JV	Ingleside, TX	2016	New Ethylene
20	PTT Global Chemical	Under Consideration	NA	New Ethylene
21	Hanwha Chemical	Under Consideration	NA	New Ethylene
22	Orascom Construction	Beaumont, TX	2011	Ammonia Restart
23	Orascom Construction	Beumont, TX	2012	Methanol Restart
24	Orascom Construction	Lee County, IA	2015	New Fertilizer
25	Potash Corp	Geismar, LA	2013	Ammonia Restart
26	Potash Corp	Augusta, GA	2013	Ammonia Expansion
27	Rentech Nitrogen	East Dubuque, IL	2013	Ammonia Expansion
28	Austin Powder	Mosheim, TN	2014	Ammonia Expansion
29	LyondellBasell	Channelview, TX	2014	Methanol Restart
30	Methanex	Geismar, LA	2015	Methanol Migration
31	CF Industries	Donaldsonville, LA	2015	Ammonia Expansion
32	CF Industries	Port Neal, IA	2015	Ammonia Expansion
33	Incitec Pivot	Under Consideration	NA	Ammonia Migration
34	Koch Fertilizer	Various	NA	Ammonia Expansion
35	LSB Industries	Pryor, OK	NA	Ammonia Restart
36	Dyno Nobel	Waggaman, LA	2015	New Ammonia
37	Celanese	Clear Lake, TX	2015	New Methanol
38	CHS Inc.	ND	2016	New Ammonia
39	Agrium	Under Consideration	2017	New Fertilizer
40	Dakota Gas	Beulah, ND	2016	New Fertilizer
41	ND Corn Growers Association	ND	NA	New Fertilizer
42	Ohio Valley Resources	Rockport, IN	2016	New Ammonia
43	Mosaic	St. James Parish, LA	2016	Ammonia Expansion
44	Dow	Freeport, TX	2015	New Propylene
45	Dow	Freeport, TX	2018	New Propylene
46	Eastman	Under Consideration	2015	New Propylene
47	Formosa	Point Comfort, LA	2016	New Propylene
48	LyondellBasell	Channelview, TX	2014	New Propylene
49	Mitsui	Ohio	2012	Propylene Expansion
50	Enterprise	Mont Belvieu, TX	2013	Propylene Expansion
51	Enterprise	Mont Belvieu, TX	2015	New Propylene
52	Exxon Mobil	Baytown, TX	2016	2 New Polyethylenes
53	Chevron Phillips	Old Ocean, TX	2017	2 New Polyethylenes
54	Eastman	Longview, TX	2012	EthylHexanol Expansion
55	Chevron Phillips	Baytown, TX	2014	New Hexene
56	Huntsman Chemical	McIntosh, AL	NA	Epoxy Expansion
57	INEOS	Gulf Coast	NA	Ethylene oxide
58	Kuraray	Pasadena, CA	2014	EVOH Expansion
59	Lanxness	Orange, TX	NA	Nd-PBR
60	Lubrizol	Deer Park, TX	2015	Plastic Resins

61	Honeywell Specialty materials	Mobile, AL	2012	Adsorbents, Catalysts
62	Westlake	Geismar, LA	2013	New Chlor-Alkali
63	Dow-Mitsui JV	Freeport, TX	2013	New Chlor Alkali
64	Molycorp	Mountain Pass, CA	NA	New Chlor-Alkali and rare earth metals mining
65	Formosa	Point Comfort, TX	2012	Chlorine/Caustic Soda
66	Formosa	Point Comfort, TX	2012	Ethylene Dichloride
67	Shintech	Plaquemine, LA	2012	VCM
68	Shintech	Plaquemine, LA	2012	Chlorine/Caustic Soda
69	Shintech	Plaquemine, LA	2012	PVC
70	Occidental	Jacksonville, TN	2013	Chlorine and Caustic Soda
71	Dow Agrosciences	Freeport, TX	NA	Herbicide
72	Mitsubishi Chemical Holdings Corp.	Freeport, TX	2017	Acrylic Resin
73	South Louisiana Methanol	St. James Parish, LA	2016	New Methanol
74	Ascend Performance Materials	Alvin, TX	2015	New Propane Dehydrogenation
75	Indemitsu / Mitsui	Freeport, TX	2016	Alpha Olefins
76	BASF	Geismar, LA	2014	New Formic Acid
77	Incitec Pivot	Waggaman, LA	2016	New Fertilizer
78	Eastman	Kingsport, TN	2013-2020	Multiple Expansions
79	G2X Energy	Pampa, TX	2014	New Methanol
80	Northern Plains Nitrogen	Grand Forks, ND	2017	Fertilizer / Urea
81	Cronus Chemicals	Under Consideration	NA	New Ammonia
82	Appalachian Resins	Marshall County, WV	2015	New Polyethylene
83	Petrologistics	Houston, TX	2016	Propylene Expansion
84	Linde	La Porte, TX	2015	Gasification and Air Separation Units
Steel & Aluminum				
85	Alcoa	Upper Burrell, PA	2012	Expansion
86	Alcoa	Lafayette, Indiana	2014	New
87	Alcoa	Davenport, IA	2013	Expansion
88	ArcelorMittal	Cleveland, OH	2012	Expansion
89	Carpenter Technology	Reading, PA	NA	Expansion
90	Carpenter Technology	Limestone County, AL	2013	New
91	Coilplus	North Carolina	2014	Expansion
92	Essar Steel	Nashwauk, MN	2015	New
93	Gerdau	St. Paul, MN	2014	New
94	Nucor	Blytheville, AK	2014	Expansion
95	Timken	Canton, OH	2014	Expansions
96	United States Steel	Lorain, OH	Completed 10/12	Expansions
97	United States Steel	Leipsic, OH	NA	New Steel
98	Metal-Matic	Middleton, OH	2012	Expansion
99	Vallourec and Mannesmann	Youngstown, OH	NA	New
100	Welspun	Little Rock, AK	NA	Expansion
101	Nucor	St. James Parish, LA	2013	New
102	Voestalpine	Under Consideration	NA	New
103	Borusan Mannesman	Under Consideration	2014	New
Tires				
104	Bridgestone	Aiken, SC	2014	New off-road radial tire / expansion passenger/light truck tire
105	Continental	Sumter, SC	2013 start / 2021 full capac.	Passenger and light truck tires
106	Michelin	Anderson, SC	2015	Earthmover tires (OTR)
107	Bridgestone	Bloomington, IL	2013	OTR Tires
Plastics				
108	M&G Group	Corpus Christi, TX	NA	New PET Plant
109	M&G Group	Corpus Christi, TX	NA	New PTA Plant
110	Huntington Foam	Greenville, MI	NA	Expansion
111	JM Eagle	Sunnyside, WA and Meadville, PA	NA	Polyethylene expansion
112	Springfield Plastics	Auburn, IL	2012	Polyethylene expansion
113	Kyowa America	Portland, TN	NA	Plastic Injection Molding
114	Lanxess	Gastonia, NC	Opened 9/12	Plastic

Natural Gas to Liquids				
115	Shell	LA or TX	NA	New
116	Sasol	LA	2018	New
117	Calumet Specialty Products Partners	Karns City, PA	2014	New
118	G2X Energy	Lake Charles, LA	2017	New
Glass				
119	Sage	Fairbaul, MN	Opened 9/12	Dynamic; Electrochromic Glass
Transportation &Transportation Equipment				
120	Caterpillar	Athens, GA	NA	Tractors and Excavators
121	Airbus	Mobile, AL	2015	Airplanes
122	Honda Motor Co.	Anna, OH	2012	Advanced Transmission Components
Packaging				
123	Abbott Laboratories	Tipp City, OH	2013	Aseptic Packages
Current as of May 2013				

CHART 7 – *List of LNG export applications.*

NATURAL GAS EXPORT APPLICATIONS

(Updated June 13, 2013)

NO.	NAME	EXPORT DESTINATION	LOCATION	SIZE OF EXPORTS	DATE FILED	DATE APPROVED
1	Sabine Pass LNG Terminal	Free Trade Nations	Sabine, LA	803 bcf/year over a 30-year period	08/11/10	09/07/10
	Sabine Pass LNG Terminal	Non-Free Trade Nations	Sabine, LA	803 bcf/year over a 30-year period	10/12/10	05/20/11
2	Lake Charles Exports, LLC	Free Trade Nations	Lake Charles, LA	730 bcf/year over a 25-year period	05/06/11	07/22/11
	Lake Charles Exports, LLC	Non-Free Trade Nations	Lake Charles, LA	730 bcf/year over a 25-year period	05/06/11	Pending
3	Carib Energy LLC	Free Trade Nations	Southeast Atlantic, FL, Gulf Coast	10.95 bcf/year over a 25-year period	06/06/11	07/27/11
	Carib Energy LLC	Non-Free Trade Nations	Southeastern United States, Gulf Coast	3.65 bcf/year over a 25-year period	10/20/11	Pending
4	Jordan Cove Energy Project	Free Trade Nations	Coos Bay, OR	438 bcf/year over a 30-year period	09/22/11	12/07/11
	Jordan Cove Energy Project	Non-Free Trade Nations	Coos Bay, OR	292 bcf/year over a 25-year period	03/23/12	Pending
5	Cameron LNG LLC (Sempra)	Free Trade Nations	Cameron, LA	620.50 bcf/year over a 20-year period	11/10/11	01/17/12
	Cameron LNG LLC (Sempra)	Non-Free Trade Nations	Cameron, LA	620.50 bcf/year over a 20-year period	12/21/11	Pending
6	Dominion Cove Point, LP	Free Trade Nations	Calvert County, MD	365 bcf/year over a 25-year period	09/01/11	10/07/11
	Dominion Cove Point, LP	Non-Free Trade Nations	Calvert County, MD	365 bcf/year over a 25-year period	10/03/11	Pending
7	Freeport LNG, LLC	Free Trade Nations	Freeport, TX	511 bcf/year over a 25-year period	12/17/10	02/10/11
	Freeport LNG, LLC	Non-Free Trade Nations	Freeport, TX	511 bcf/year over a 25-year period	12/17/10	05/17/13

8	Freeport LNG, LLC	Free Trade Nations	Freeport, TX	511 bcf/year over a 25-year period	01/12/12	02/10/12
	Freeport LNG, LLC	Non-Free Trade Nations	Freeport, TX	511 bcf/year over a 25-year period	12/19/11	Pending
9	Gulf Coast LNG Export, LLC	Free Trade Nations	Brownsville, TX	1022 bcf/year over a 25-year period	01/10/12	10/16/12
	Gulf Coast LNG Export, LLC	Non-Free Trade Nations	Brownsville, TX	1022 bcf/year over a 25-year period	01/10/12	Pending
10	Gulf LNG Liquefaction	Free Trade Nations	Pascagoula, MS	547.50 bcf/year over a 25-year period	05/02/12	06/15/12
	Gulf LNG Liquefaction	Non-Free Trade Nations	Pascagoula, MS	547.50 bcf/year over a 20-year period	08/31/12	Pending
11	LNG Development Company	Free Trade Nations	Warrenton, OR	456.25 bcf/year over a 30-year period	05/03/12	05/31/12
	LNG Development Company	Non-Free Trade Nations	Warrenton, OR	456.25 bcf/year over a 25-year period	07/16/12	Pending
12	SB Power Solutions	Free Trade Nations	Atlantic Coast	25.55 bcf/year over a 25-year period	05/07/12	06/15/12
13	Southern LNG Company	Free Trade Nations	Savannah, GA	182.50 bcf/year over a 25-year period	05/15/12	06/15/12
	Southern LNG Company	Non-Free Trade Nations	Savannah, GA	182.50 bcf/year over a 20-year period	08/31/12	Pending
14	Excelerate Liquefaction	Free Trade Nations	Calhoun County, TX	503.70 bcf/year over a 20-year period	05/25/12	08/09/12
	Excelerate Liquefaction	Non-Free Trade Nations	Calhoun County, TX	503.70 bcf/year over a 20-year period	10/05/12	Pending
15	Golden Pass Products, LLC	Free-Trade Nations	Sabine Pass, TX	949 bcf/year over a 25-year period	08/17/12	09/27/12
	Golden Pass Products, LLC	Non-Free Trade Nations	Sabine Pass, TX	949 bcf/year over a 25-year period	10/25/12	Pending
16	Cheniere Marketing, LLC	Free Trade Nations	Corpus Christi, TX	766.50 bcf/year over a 25-year period	08/31/12	10/16/12
	Cheniere Marketing, LLC	Non-Free Trade Nations	Corpus Christi, TX	766.50 bcf/year over a 22-year period	08/31/12	Pending
17	Main Pass Energy Hub, LLC	Free Trade Nations	16 miles offshore of LA	1,175.30 bcf/year over a 30-year period	09/11/12	01/04/13
18	CE FLNG, LLC	Free Trade Nations	Plaquemines Parish, LA	390.55 bcf/year over a 30-year period	09/12/12	11/21/12
	CE FLNG, LLC	Non-Free Trade Nations	Plaquemines Parish, LA	390.55 bcf/year over a 30-year period	09/12/12	Pending
19	Waller LNG Services, LLC	Free Trade Nations	Cameron, LA	58.40 bcf/year over a 25-year period	10/12/12	12/20/12
20	Pangea LNG (North America)	Free Trade Nations	Ingleside, TX	397.85 bcf/year over a 25-year period	11/29/12	01/30/13
	Pangea LNG (North America)	Non-Free Trade Nations	Ingleside, TX	397.85 bcf/year over a 25-year period	12/19/12	Pending
21	Magnolia LNG, LLC	Free Trade Nations	Lake Charles, LA	197.10 bcf/year over a 25-year period	12/18/12	02/27/13
22	Trunkline LNG Export, LLC	Free Trade Nations	Lake Charles, LA	Combined w/ Lake Charles Exports Appl.	01/10/13	03/07/13
	Truckline LNG	Non-Free Trade	Lake Charles, LA	Combined w/ Lake Charles	01/10/13	Pending

	Export, LLC	Nations		Exports Appl.		
23	Gasfin Development USA	Free Trade Nations	Cameron Parish, LA	73 bcf/year over a 25-year period	01/11/13	03/07/13
24	Freeport-McMoRan Energy	Free Trade Nations	16 miles offshore of LA	Combined w/ Main Pass Energy Hub, LLC	02/22/13	05/24/13
	Freeport-McMoRan Energy	Non-Free Trade Nations	16 miles offshore of LA	1,175.30 bcf/year over a 30-year period	02/22/13	Pending
25	Sabine Pass LNG Terminal	Free Trade Nations	Sabine, LA	102.20 bcf/year over a 20-year period	02/27/13	Pending
	Sabine Pass LNG Terminal	Non-Free Trade Nations	Sabine, LA	102.20 bcf/year over a 20-year period	02/27/13	Pending
26	Sabine Pass LNG Terminal	Free Trade Nations	Sabine, LA	87.60 bcf/year over a 20-year period	04/02/13	Pending
	Sabine Pass LNG Terminal	Non-Free Trade Nations	Sabine, LA	87.60 bcf/year over a 20-year period	04/02/13	Pending
27	Venture Global LNG, LLC	Free Trade Nations	Cameron Parish, LA	244.55 bcf/year over a 25-year period	05/13/13	Pending
	Venture Global LNG, LLC	Non-Free Trade Nations	Cameron Parish, LA	244.55 bcf/year over a 25-year period	05/13/13	Pending

Source: DOE

TOTAL = 11,169 Bcf/year (30.60 Bcf/day or 11.169 Tcf/year)

- **U.S. natural gas consumption in 2012 was 25.5 Tcf**
- **11.169 Tcf is 43.8% of 2012 demand**

Mr. WHITFIELD. Our next witness is Mr. Dean Cordle, who is the president and CEO of AC&S, Incorporated, a chemical company.

And we are delighted that you are here, and you are recognized for 5 minutes. Mr. Cordle.

STATEMENT OF DEAN CORDLE

Mr. CORDLE. Good morning, Chairman Whitfield and Terry, Ranking Members Rush and Schakowsky, and members of the Subcommittee on Commerce, Manufacturing, and Trade, and of the Subcommittee on Energy and Power. Thank you very much for your leadership in holding today's joint subcommittee hearing on United States energy abundance and its tie to our manufacturing competitiveness and advantage.

My name is Dean Cordle, president, CEO of AC&S, a chemical manufacturing facility located in Nitro, West Virginia, appearing on behalf of the American Chemistry Council.

I am pleased to comment on the critical role that abundant and affordable oil and natural gas is playing in revitalizing the competitiveness of the U.S. chemical industry, driving enormous new investments in chemical manufacturing and creating hundreds of thousands of new jobs in the process.

We are a very small company. We have over 40 employees. We started from humble beginnings back in 1988 as a railcar cleaning facility. Over the years, we have added chemical manufacturing, and today, we serve the refining, pharmaceutical and agricultural industry in producing intermediates and finished products for them.

This shale gas revolution has transformed our company. We are putting steel in the ground, as we speak, we are nearing completion of a new production unit, and my focus right now on growth opportunities is certainly centered in the oil and gas industry and the downstream derivatives.

The U.S. chemical industry is highly energy intensive. We use energy inputs, mainly natural gas and natural gas liquids as both our major fuel source and feed stock. About 75 percent of the cost of the producing petrochemicals and plastics is related to the cost of energy-derived raw materials. Consequently, our ability to compete in global markets is largely determined by the price and availability of natural gas and gas liquids.

The consulting firm IHS forecasts that the U.S. has a 100-year supply of natural gas. This abundant and affordable supply of natural gas has transformed the U.S. chemical industry from the world's high-cost producer 5 years ago to the world's low cost producer today. As a result, the U.S. enjoys a decisive competitive advantage in the cost of producing basic petrochemicals. For example, it costs less than $400 a ton to produce ethylene in the United States, whereas it compares $1,000 a ton in Europe and even more in Japan. As a result of this cost advantage, dozens of companies are making plans to invest in new U.S.-based chemical production capacity.

ACC estimates that more than $72 billion in new capital expenditures will be invested in the U.S. between 2012 and 2020. Roughly half of those investments will come from firms that are based outside of the U.S. The U.S. is emerging as the place to manufacture

chemicals now. The supply response from shale gas will directly create tens of thousands of new jobs in the U.S. chemical industry.

Policy will play an important role if we are to optimize our competitive advantage. These policies include implementing a true all-of-the-above energy policy that enables all energy sources, including energy efficiency, to fairly compete in the market. Second, we need to keep oversight of the unconventional oil and gas production in the hands of the States. In addition, we also need to expedite permitting and construction of infrastructure needed to move that gas and gas liquids to market.

In closing, I want to thank this subcommittee for the opportunity to describe how abundant and affordable quantities of natural gas and natural gas liquids are creating a manufacturing renaissance in the U.S. Chemical industry. In a few short years, the U.S. chemical industry has moved from an industry in contraction to an industry facing an era of unprecedented expansion.

Thank you, Mr. Chairman.

Mr. WHITFIELD. Thank you, Mr. Cordle. We appreciate that.

[The prepared statement of Mr. Cordle follows:]

Statement of Dean Cordle
President and CEO of AC&S Inc.

Before the
House Committee on Energy and Commerce
Subcommittee on Energy and Power
and
Subcommittee on Commerce, Manufacturing, and Trade

Hearing on "U.S. Energy Abundance: Manufacturing Competitiveness and America's Energy Advantage."
June 20, 2012

Executive Summary

- The US chemical industry is highly energy intensive. We use energy inputs, mainly natural gas and natural gas liquids, as both our major fuel source and feedstock. Our ability to compete in global markets is largely determined by the price and availability of natural gas and natural gas liquids.

- The consulting firm IHS forecasts that the US has a 30 year supply of natural gas – some 900 trillion cubic feet – that can be profitably produced at $4.00 per million BTU or less. This abundant and affordable supply of natural gas has transformed the US chemical industry from the world's high-cost producer five years ago, to among the world's lowest-cost producers today.

- As a result, the US enjoys a decisive competitive advantage in the cost of producing basic petrochemicals like ethylene, ammonia and methanol. For example, it costs less than $400 a ton to produce ethylene in the US. That compares to more than $1000 a ton in Europe and even more in Japan.

- Dozens of companies are making plans to invest in new US-based chemicals production capacity. ACC estimates that more than $72 billion in new capital expenditures will be invested in the US between 2012 and 2020. The US is emerging as "the place to manufacture chemicals now" as European and Asian companies make plans to source production in the US.

- The supply response from shale gas will directly create 46,000 jobs in the US chemical industry due to expanded chemical production. In addition to the jobs created in the US chemical industry, another 264,000 indirect jobs would be created in supplier industries, and another 226,000 payroll-induced jobs would be created elsewhere in the economy through household spending of wages, leading to a total of 537,000 new jobs

Good Morning. My name is Dean Cordle, President and CEO of AC&S Inc., a chemical manufacturing company based in Nitro, W.Va. Appearing on behalf of the American Chemistry Council,* I am pleased to comment on the critical role that abundant and affordable oil and natural gas is playing in revitalizing the US chemical industry, improving our global competitiveness, driving enormous new investments in chemical manufacturing, and creating hundreds of thousands of new jobs.

The shale gas energy boom is directly affecting our company. We use the low-cost natural gas found in shale as a fuel source to produce steam for our chemical manufacturing operations. In addition, we are manufacturing oil field chemicals for upstream drilling activities in the Appalachian Basin. West Virginia is a net energy exporting state and the shale gas revolution underway has already resulted in thousands of new jobs in West Virginia.

Shale Gas Is Game Changer for U.S. Chemicals Production

The US chemical industry is highly energy intensive. We use energy inputs, mainly natural gas and natural gas liquids, as both our major fuel source and raw material, or feedstock. About 75 percent of the cost producing petrochemicals and plastics in the US is related to the cost of energy-derived raw materials. Consequently, our ability to compete in global markets is largely determined by the price and availability of natural gas and natural gas liquids, whereas producers in other regions rely on energy feedstock derived from crude oil.

According to the Potential Gas Committee, the nation's leading group of natural gas supply experts, the US has a potential natural gas supply of 2,384 Trillion Cubic Feet, well more than a hundred years of continuous supply. What's more, the consulting firm IHS Global Insight forecasts that the US has a 30 year supply of natural gas – some 900 trillion cubic feet – that can be profitably produced at $4.00 per million BTU or less. Natural gas sold for nearly 120 percent the price of Brent crude oil a decade ago. Recently, natural gas traded for less than 20 percent of the price of crude. This abundant and affordable supply of natural gas has transformed the US chemical industry from the world's high-cost producer five years ago to among its lowest-cost producers today.

Feedstocks in Shale Gas Are Key to Competitive Advantage

As a result of low-cost natural gas, the US enjoys a decisive competitive advantage in the cost of producing basic petrochemicals like ethylene, ammonia and methanol. The key this advantage is the incredible supply of petrochemical feedstocks found in shale formations. The chemical industry uses natural gas as a feedstock – to produce ammonia, methanol and hydrogen, for example – but we use even larger volumes of natural gas liquids (e.g., ethane, propane, butane) as our principal raw materials. Ethane supply is already growing quite rapidly and IHS projects that it will increase by more than 90 percent by 2030. Ethane is priced to sell in the US: US crackers are producing ethylene for less than $400 a ton compared to about $1,000 per ton in Europe and even more in Asia.

US natural gas based prices have been cut in half since 2008, while oil based prices have not moved. This has created a major advantage to gas-based chemical producers in the US and has put oil-based producers in Europe at a significant disadvantage. IHS notes that as recently as 2011, North American and Western European chemical firms both produced about 30 million tons of basic chemicals and plastics. But, as IHS says, "changes in global energy markets are having profound impacts on (global) petrochemicals markets." Thanks to tremendous supplies of low-cost natural gas, North American chemicals and plastics production is expected to more than double to 70 million tons by 2020, while Western European output contracts to 20 million tons.

New Capital Investment Pouring Into the U.S.

The US is emerging as "the place to manufacture chemicals now" as European and Asian companies, as well as US firms, make plans to source production in the US. Dozens of companies are making plans to invest in new US-based chemicals production capacity. ACC has identified more than 100 potential chemical industry investment projects, valued at nearly $72 billion, announced as of March 2013 and are expected to come online between now and 2020. Roughly half of the U.S. chemical industry investments announced to date is by firms based abroad. The fact that such large numbers of foreign-owned companies are choosing to source their chemistry in the United States is unprecedented in recent history, and a testament to the value and affordability of America's shale gas and ethane supplies.

Here is one recent example of how chemical companies are capitalizing on the shale gas revolution in the United States: Last month, the BASF TOTAL Petrochemicals LLC (BTP) joint venture (40% Total, 60% BASF) announced it had revamped the Port Arthur steam cracker in Texas to process ethane, found in abundance in U.S. shale gas. BASF is a German company. Total is based in France. Commented Patrick Pouyanné, President of Total Refining & Chemicals:

> *Our strategy in the United States consists of consolidating our production base by taking advantage of market trends. The Port Arthur steam cracker is one of the biggest in the world, with a capacity of 1 million tons of ethylene per year. It was commissioned in 2001 to process naphtha, distilled from petroleum. In response to petroleum product price hike and the emergence of*

abundant gas resources, we adapted the steam cracker to give it flexibility and maintain its competitiveness. It can now use as a feedstock ethane, which costs around $30 per barrel of oil equivalent (boe)— versus around $100/boe for naphtha — and liquefied petroleum gases such as butane and propane, which are also cheaper.

In addition to this project, the BASF-Total Petrochemicals joint venture has also begun building a tenth ethane cracking furnace, scheduled to come on stream in the second quarter of 2014. The new furnace will improve the steam cracker's availability and increase its cracking capacity by nearly 15%.

The US feedstock cost advantage in petrochemicals is creating an export boom for ethylene derivatives. North American net exports of polypropylene, vinyls and polyethylene will increase from less than 15 percent of production today to more than 30 percent of production by 2025. NE Asia will remain a large market for US made ethylene derivatives for a long time to come.

Chemical Industry Investments Will Yield Economic Benefits for the U.S.

The $71.7 billion in announced US chemical capacity-expansion investments will create an additional $66.8 billion in chemical industry output, providing a 9% gain above what output would be otherwise in 2020. In turn, this will create new chemical industry jobs and additional output in supplier (or indirect) industries. Combined, the added output of these supplier sectors of the economy will lead to an additional $100 billion in indirect economic output. On top of the

direct and indirect effects, household spending as a result of the new jobs created (i.e., payroll-induced effects) will lead to an additional gains of $34 billion gain elsewhere in the economy.

Looking at employment, the supply response from shale gas will directly create 46,000 jobs in the US chemical industry due to expanded chemical production. These are high-paying jobs, the type of manufacturing jobs that policy-makers would welcome in this economy. In addition to the jobs created in the US chemical industry, another 264,000 indirect jobs would be created in supplier industries, and another 226,000 payroll-induced jobs would be created elsewhere in the economy through household spending of wages, leading to a total of 537,000 new jobs. The jobs created and expanded output from the increase in chemical industry production would lead to a gain in federal, state and local tax collections, totaling nearly $14 billion in 2020.

Policies Will Influence Our Ability to Realize the Shale Gas Opportunity

A successful national energy policy is vital to optimizing the competitiveness of the US chemical industry and realizing the shale gas opportunity. Energy policy must embrace the development of ALL viable energy sources, including coal and nuclear (in addition to oil, gas and renewables). It must allow the markets to function as freely as possible and create the most level playing field possible, which will mean putting energy efficiency on an equal footing with other energy sources. It must be aligned with tax and trade policies, and, it should be designed to avoid excessive price volatility by balancing supply and demand. At a time when gas demand is poised to grow in several sectors, federal policies on access to gas on federal lands are not aligned with demand forecasts.

On the subject of LNG exports, in February ACC's Board reaffirmed its support for free trade principles in the context of energy policy. ACC supports the application of existing trade rules (including WTO commitments and bilateral Free Trade Agreements). We support exports of American-made products, including Liquefied Natural Gas, and we oppose imposition of any new LNG export bans or restrictions.

Government policies will play a key role in ensuring that we optimize our competitive advantage. Important policies include:

- Implementing a true all-of-the-above energy policy that enables all energy sources (including energy efficiency) to fairly compete in the market.
- Aligning federal supply policies with demand policies (streamlining production permits onshore, expanding access to energy resources offshore)
- Keeping oversight of unconventional oil and gas production in the hands of the states
- Expediting permitting and construction of infrastructure needed to move gas and gas liquids to market.
- Maintaining accelerated depreciation tax schedules to advance chemical projects.
- Maintaining access to emerging export markets.

ACC thanks the subcommittees for the opportunity to explain how abundant and affordable supplies of natural gas and natural gas liquids are creating a manufacturing renaissance in the US chemical industry. In a few short years, the US chemical industry has moved from an industry in contraction to an industry facing an era of unprecedented expansion.

* The American Chemistry Council (ACC) represents the leading companies engaged in the business of chemistry. ACC members apply the science of chemistry to make innovative products and services that make people's lives better, healthier and safer. ACC is committed to improved environmental, health and safety performance through Responsible Care®, common sense advocacy designed to address major public policy issues, and health and environmental research and product testing. The business of chemistry is a $760 billion enterprise and a key element of the nation's economy. It is the largest exporting sector in the US, accounting for 12 percent of US exports. Chemistry companies are among the largest investors in research and development. Safety and security have always been primary concerns of ACC members, and they have intensified their efforts, working closely with government agencies to improve security and to defend against any threat to the nation's critical infrastructure.

Mr. WHITFIELD. And our next witness is Ms. Phyllis Cuttino, who is the director of the Clean Energy Program at the Pew Charitable Trust.

And we thank you for being with us, and you are recognized for 5 minutes.

STATEMENT OF PHYLLIS CUTTINO

Ms. CUTTINO. Thank you, Mr. Chairman, and fellow members of the committee. I am thrilled to be here to discuss clean energy as it relates to the energy transformation in the United States, advanced manufacturing and our competitiveness globally.

Research by the Pew Charitable Trust has shown that clean energy technologies have entered the mainstream of global energy markets. In 2012, $269 billion was invested and clean energy deployment was a record 88 gigawatts, spurred by dramatic price declines.

Companies and countries are turning to clean energy because it enhances energy security, protects the environment and represents a tremendous economic opportunity. Indeed, there is every reason to believe that private investment will continue to grow significantly as countries prioritize clean energy. In some markets, renewable energy systems are already the cheapest and best options. Even in oil-rich Saudi Arabia, they set a goal to obtain 30 percent of their electricity from solar power.

The International Energy Agency predicts that clean energy technologies will provide more than half of electric generating capacity added over the next 25 years, and most forecasters expect trillions of dollars to be invested over the next several decades.

In short, clean energy is a significant economic opportunity for U.S. manufacturers, but while the global future of clean energy is bright, U.S. competitiveness in the sector is cloudier. Although we lead in clean energy innovation, we are not manufacturing, deploying or exporting these technologies as we should be. Once the clear worldwide leader, policy uncertainty in this country has had an adverse impact on U.S. standing in the sector. China now leads the world in attracting private investment: $65.1 billion in 2012. In the same year, the United States, our investment fell to $35.6 billion. We are now in second place. Simply put, America is underperforming in the clean energy sector.

Last year, Pew organized roundtable discussions in New York, in Ohio, in Colorado, in Georgia, in Mississippi, and in Washington, D.C., with clean energy industry leaders in the areas of finance, manufacturing, innovation and deployment. They identified three key challenges facing the industry and six policies for overcoming them. These challenges are: policy uncertainty. This was described as the overriding impediment to clean energy investment and progress. The boom and bust nature of U.S. clean energy programs makes it hard for companies to succeed and develop the supply chains and business models they need.

International competition was second. It is a tough time for producers, with fierce competition and worldwide oversupply. We should expect some bankruptcies and consolidation to occur, just as they have characterized every emerging sector, from automobiles to

computers, but over the long term, this will result in a stronger, more efficient and cost-competitive industry.

Tight credit markets are a third challenge. While not unique to clean energy, it is difficult to raise the capital needed to grow businesses and scale up technologies.

Now, Congress has numerous options for addressing these challenges and bolstering U.S. competitiveness. Our roundtable participants identified six priorities for you all to consider. First, set a clear, consistent and long-term goal for the deployment of clean energy, thereby providing the certainty needed for inventors to invent, investors to invest and manufacturers to produce.

Second, support energy R&D at higher levels and continue recent initiatives like ARPA–E and energy innovations hubs in order to maintain the pipeline of ideas and innovations for driving down the costs and ratcheting up the performance of advanced energy technologies. This is critical to U.S. competitiveness.

Third, renew the production and investment tax credits for a few more years. Congress has provided incentives to incumbent technologies. The four permanent tax incentives in the code are for oil, gas and nuclear power. Our industry participants would welcome a multiyear but time-limited extension of clean energy tax credits to help ensure full market maturation.

Fourth, level the playing field by addressing the barriers that impede industry progress. For example, pass the proposed MLP Parity Act, which would allow clean energy to qualify for the same tax treatment that is open to investments in the oil and gas infrastructure.

Fifth, support manufacturing through advanced energy manufacturing tax credit and the Department of Energy's clean energy manufacturing initiative.

And finally, sixth, strengthen and expand trade promotion for exports of American-made clean energy technologies to growing and emerging markets.

In conclusion and in view of current and projected investment trends, U.S. competitiveness in clean energy warrants public and private sector priority and partnership.

Mr. Chairman, policy matters. Encouraging innovation, deployment, manufacturing and trade of clean energy technologies through policy will help ensure America capitalizes on the substantial opportunity for the Nation's economic, environmental and national security prospects.

We at the Pew Charitable Trust look forward to working with you and Congress to pass these policies and realize these goals.

Mr. WHITFIELD. Thank you very much.

[The prepared statement of Ms. Cuttino follows:]

levels declined 11 percent to $269 billion in 2012, deployment of clean generating capacity increased by more than 10 percent to a record 88 gigawatts of new generating capacity additions in 2012.

Our research shows that:

- Clean energy investment is shifting from the West to the East. Last year, Asia/Oceania became the leading regional destination for clean energy investment for the first time ever, attracting $101 billion in private investment – 42 percent of the global total.
- Investment in technologies is also shifting. For the second year in a row, the solar sector attracted more financing than any other clean energy technology: $126 billion was invested in solar in 2012. China, Europe, and the United States were top markets for investment.
- Prices for solar panels and wind turbines are declining as competition and deployment increases. In 2012, solar generating capacity grew by 4 percent to 31 gigawatts and wind added 48.6 gigawatts of capacity – record amounts for both categories.
- Markets in developing countries are growing most rapidly. In 2012, 20 percent of private investment went to non-G20 nations. Previously, the G-20 nations accounted for 95 percent of investment.

And the evidence suggests that the positive momentum and market penetration of clean, renewable energy will continue. Recently, the Bloomberg New Energy Finance research team estimated that clean energy investment is most likely to grow by 230 percent to a projected $630 billion annually in 2030. This same study estimates that 70 percent of new power generating capacity added worldwide over the next 25 years will be renewable.

The rationale for the clean energy revolution is no different than the rationale for the ongoing natural gas revolution. National governments, businesses and consumers are turning to clean energy to meet three basic interests: energy security, environmental security and economic opportunity.

Energy Security

Energy price volatility in recent decades has caused individuals, businesses and countries to seek out opportunities to enhance energy security and reduce vulnerability to price shocks or supply disruptions. In fact, our military has taken a position of institutional leadership in deploying clean energy as part of its effort to ensure the security of supply so that no mission and no warfighter is compromised by energy supply disruptions.

We've made great strides in enhancing our energy security in recent years by increasing efficiency, bolstering domestic supply of conventional fuels and deploying advanced energy technologies and fuels that help to diversify the energy mix. The transformation of the electric sector illustrates the change underway. FERC energy infrastructure data shows that gas and renewable energy sources have accounted for more than 80 percent of U.S. electric power capacity additions in three of the last four years. In 2012, renewables (mostly wind) accounted for 47 percent of all power capacity additions, with gas accounting for another 33 percent.

Environmental Security

Globally, concern about emissions associated with the combustion of fossil fuels that are harmful to human health and the environment is also spurring the deployment of clean energy technologies. Both the public and private sectors are embracing clean energy as a means of reducing local and global air pollution.

The U.S. Environmental Protection Agency estimates that electricity generation creates the lion's share of industrial air emissions in the United States, including "67 percent of national sulfur dioxide emissions, 23 percent of nitrogen oxide emissions, and 40 percent of man-made carbon dioxide emissions."[1]

The predominant fossil fuels used to generate electricity produce much more global warming related pollution than clean energy sources. Accounting for all aspects of production and use, coal results in about 20 times and natural gas 10 times the global warming related pollution as clean energy counterparts.[2]

Economic Opportunity

Recognizing public and private interests in energy and environmental security, investors see clean energy as a major economic opportunity for the future. To meet increased worldwide demand, the U.S. Energy Information Agency estimates that global energy consumption will increase by 47 percent between 2010 and 2035.[3] 85 percent of that growth will occur in emerging and developing economies. The International Energy Agency estimates that clean energy will provide more than half of that new capacity,[4] and could attract up to $5.9 trillion

worth of investment.[5] In the last 8 years, renewable energy has garnered more than $1.3 trillion worth of investment.

There is no doubt but that these investments are going to create jobs and economic opportunities for the countries and companies that are at the forefront of the clean energy industry. Already, an estimated 5.7 million jobs around the world were connected to the clean energy sector as of the end of 2012.[6] In the United States, an estimated 152,000 Americans are employed in biomass, 100,000 employed in solar, and 75,000 are employed in the wind sector.[7]

The expansion of clean energy is also helping provide new manufacturing opportunities in the United States and other nations. According to the Solar Energy Industries Association, one-fourth (25,000) of all jobs in the U.S. solar sector are in manufacturing.[8] In recent years, American wind power has created almost 500 domestic manufacturing facilities and today, the manufacturing sector sources 30,000 domestic wind jobs.[9] The U.S. wind supply chain has grown in recent years, with 70 percent of the component parts of wind installations in the United States being sourced domestically.[10] Recent research has shown that investments in clean energy have yielded more than three times the number of jobs as comparable investments in conventional fossil fuels. [11]

WHERE THE UNITED STATES STANDS

With the global clean energy sector growing in size and reach, the United States finds itself at a competitive crossroads. Once a world leader in innovation, manufacturing, deployment and export of clean energy technologies, the United States now faces considerable competitive

challenges, as the center of gravity in worldwide clean energy leadership shifts from the industrialized Western powers to the emerging economies of Asia.

China appears to have established a commanding lead in the clean energy race. Attracting $65.1 billion in private investment in 2012, China accounted for 30 percent of total investment among G-20 nations and attracted leading levels of investment in wind, solar and other renewables. All told, 23 gigawatts of new clean generating capacity were installed in China.

Whereas investment in China's clean energy sector has been increasing steadily, investment in the United States has been a roller coaster. Uncertainty surrounding the future of the production tax credit spurred unprecedented wind energy installations in the United States in 2012. But the rush to complete wind projects was insufficient to stem a 37 percent drop in U.S. clean energy investment. Overall, the United States saw some $35.6 billion invested, second-best among G-20 nations. Of that, $16.5 billion was invested in the solar sector and $13.9 billion went to wind energy technologies, enabling a U.S.-record 13.6 gigawatts of installed wind energy and 3.2 gigawatts of solar energy. The solar sector was something of a bright spot for the United States, with financial innovations such as private third-party financing leading to an investment increase of more than 40 percent for residential photovoltaic installations. In the United States, third-party financing mechanisms accounted for more than half of the residential and commercial market for rooftop solar installations.

The United States continues to lead the G-20 in the energy-efficient/low-carbon technology and the biofuels-related categories, which attracted, $2.5 billion and $1.5 billion, respectively. In addition, venture capital and private-equity investment in the United States continued to dominate that class of financing, accounting for $4.3 billion of the $5.6 billion invested, or 78

percent of the total. Similarly, public and private research and development investment was highest in the United States, which accounted for 29 percent of the worldwide total.

With the United States leading the world in various measures of energy innovation but lagging far behind in such categories as deployment and manufacturing, it's evident that the United States is underperforming—inventing but failing to realize the economic, security, or environmental benefits of clean energy innovations through production and utilization. Installation of 3.2 gigawatts of solar was a record, but it is still less than half the amount that has been installed annually in leading European markets in recent years.

With regards to solar manufacturing, the United States has seen its early lead in this rapidly emerging sector steadily erode.[12] Over the last decade, manufacturing leadership has shifted from the United States to Japan, Europe, and more recently to Asia.[13] In 2012, 9 of the top 15 solar PV module manufacturers were located in China. Although the United States solar manufacturing sector comprises about 100 production facilities making primary PV components (polysilicon, wafers, cells, modules, and inverters),[14] the United States is home to only two of the world's top 15 solar photovoltaic manufacturers, including First Solar, the second leading manufacturer in the world.

In the wind sector, one American company – GE Wind Power – is the leading manufacturer in the world, but the rest of the top 10 is comprised of Asian and European companies. Still, the United States has developed a significant supply chain in the wind sector. At the end of 2011, 470 wind turbine-manufacturing facilities were located in the United States.[15] This represents a more than 10-fold increase from the 30-40 wind-related manufacturing factories in 2004. In the intervening years, the number of tower plants increased from 6 to 22, blade facilities increased

from 4 to 11 and the number of nacelle (housing for mechanical gears) assembly shops increased from 3 to 12. As a result, it is estimated that 70 percent of the components in U.S. wind turbines are manufactured domestically, up considerably from half a decade ago.[16]

FEEDBACK FROM ROUNDTABLE DISCUSSIONS WITH INDUSTRY

To gain a better sense of the clean energy industry in the United States, last year The Pew Charitable Trusts organized a year-long, nationwide series of meetings with leading public and private sector experts, including business leaders in the areas of finance, manufacturing, innovation and deployment, to gather their feedback as to the strengths, weaknesses and opportunities for progress in the U.S. clean energy sector.

Roundtables were held as follows:

- **New York City, New York, March 19, 2012** – Finance Roundtable convened in conjunction with Bloomberg New Energy Finance
- **Columbus, Ohio, April 25, 2012** – Manufacturing Roundtable convened in conjunction with the Central Ohio Hub for Advanced Energy Manufacturing, EWI and the Ohio Manufacturers' Association
- **Golden, Colorado, May 9, 2012** – Innovation Roundtable convened in conjunction with the National Renewable Energy Laboratory
- **Atlanta, Georgia, June 14, 2012** – Deployment Roundtable convened in conjunction with the Georgia Solar Energy Association.
- **Jackson, Mississippi, August 7, 2012** – Deployment Roundtable convened in conjunction with the Mississippi Technology Alliance.

At this point in my testimony, I'd like to share with you some of the major themes we identified from these listening sessions with the industry.

Policy Uncertainty

Lack of certainty about the direction of U.S. energy policy was identified as the overriding impediment to clean energy investment and progress. The boom and bust nature of U.S. clean energy programs makes it extremely difficult for emerging industries to develop the supply chains and business models needed to establish a foothold in the competitive energy marketplace. Uncertainty also shakes the confidence of potential investors and keeps capital on the sidelines.

The looming expiration of the Production Tax Credit (PTC) was cited repeatedly as the most obvious and serious illustration of the difficulties associated with policy uncertainty. Prior episodes of uncertainty surrounding the renewal of the PTC resulted in a 70-95 percent drop in wind energy orders in 2000, 2002 and 2004.[17]

But the PTC is not the only uncertainty that exists – research and development funding is another example. Overall, participants lamented that currently there is neither a clear sense of purpose nor direction to U.S. energy policy. In the past, it was observed, the energy sector has been successful in meeting significant public policy goals set for the industry, such as making affordable electricity universally available in the United States. Similar goals are needed now to help focus the interests and efforts of scientists, investors, businesses and the citizenry. Policymakers are encouraged to set long-term goals that foster an economy-wide transformation

toward advanced energy technologies that are cheaper, cleaner, and domestically available, thereby advancing the long-term prosperity of the United States.

International Competition

Worldwide interest in low-carbon and domestically-sourced energy supplies is creating momentum in clean energy deployment, as outlined above. Because clean energy is seen as an important economic opportunity, there has been a rush of investment in clean energy manufacturing in recent years. The speed and scale of investment in clean energy manufacturing capacity has spurred dramatic reductions in the market price for solar and wind products. The price of solar modules dropped 50 percent in 2011 alone and wind prices were down 10 percent. Recent estimates suggest that for every doubling of production capacity, the cost of manufacturing solar drops by 17 percent.[18]

Declining prices have been beneficial for consumers but stressful for producers, which now face acute global competition. In response to falling prices and growing deployment, manufacturers are making more product but at less profit. In the United States, Spain, Germany and China, several manufacturers have ceased or slowed production or gone out of business altogether, and more may soon follow. These are the realities of today's intensely competitive marketplace.

Several roundtable participants noted that the difficulties currently facing the clean energy sector are similar to those encountered in the past by other emerging technologies. The early stages of the computer and automobile industries were characterized by scores of early market entrants and subsequent consolidation. For example, it was noted that there were more than 100 car manufacturers in the early days of the industry. Experts involved in our discussions indicated

that partnerships and consolidation between large and small businesses are likely to occur in the coming months and years.

Over the long-term, it is expected that the intense competitive pressures will strengthen the industry for the future. To survive and prosper, companies will have to pursue cost-saving measures aggressively. Some of these savings will occur through improved materials and technological innovation. But industry representatives participating in our roundtables indicated that they are vigorously exploring ways to reduce "balance of system" costs across the value chain – from improved manufacturing processes to reduced financial, legal, transportation, permitting and installation costs.

It was also noted that, over the long-term, competitive pressures will place a premium on some of the strengths of American business -- including its commitment to producing high-quality products and ability to innovate across the supply chain. For example, General Electric has staked a leadership position in the production of larger and taller wind turbines that are more productive and cost-effective for customers.

Tight Credit

Recent global economic challenges and associated tight credit markets have made it difficult to raise the capital needed to grow businesses and scale up technologies in many sectors of the economy; clean energy included. Beyond the well-documented credit crunch, Pew's roundtables in 2012 revealed a number of special and distinct challenges facing clean energy businesses in the United States.

As noted previously, financing in the clean energy sector has been inhibited by perceived federal policy uncertainty. In addition, clean energy and other emerging technologies must overcome stubborn perceptions of risk, which discourage investment and increase the cost of capital.

Clean energy also faces challenges associated with the scale of its financial requirements. The energy sector is unlike the information technology or other high-tech industries—which can be brought to scale at relatively low cost. In the energy world, considerable amounts of initial capital are needed to finance the scaling of newer technologies.

While the United States leads the world in private venture capital investments associated with clean energy, these investments typically occur in the earlier, proof-of-concept stage of technological development. Venture capital funding may not be a good fit for the commercialization of promising clean energy technologies and projects because of the large upfront capital requirements involved.

That is why ongoing incentives are needed to usher this emerging industry as it approaches broad market acceptance. Declining prices are moving clean energy technologies closer to cost-competitiveness without subsidies. Already, clean energy is cost-competitive in certain domestic markets, many developing country markets (e.g. residential markets in areas with high electricity costs) and in areas with no power infrastructure. In our roundtables, we learned that the industry envisions and welcomes a subsidy-free and competitive marketplace among energy options in the power generation sector.

In fact, there is growing interest in private sector development of innovative new financing mechanisms for clean energy projects. The rapid emergence of third-party financing structures for residential solar energy projects was cited as a promising recent trend.

More broadly, experts welcome a move in the private sector to develop financial instruments suited to raising capital through broader pools of investors. Asset-backed securities, bonds and investment trusts are among the tools private sector interests are looking at to increase liquidity. In this regard, participants welcomed the entry into clean energy finance of large financial institutions such as Goldman Sachs, Bank of America, Wells-Fargo, Citigroup and Warren Buffet's Mid-American Energy Holdings.

The Energy Playing Field is Not Level

Industry roundtable participants expressed a keen interest in "leveling the playing field" between conventional and emerging power technologies. Clean energy businesses welcome the opportunity to compete head-to-head with incumbent technologies but do not believe that the current marketplace allows for this kind of fair competition.

First and foremost, industry participants noted the sustained and substantial subsidies that conventional energy technologies have received over a period of decades. For example, some conventional energy subsidies have been in place for close to 100 years.[19] Similarly, it was mentioned that there are only four permanent tax credits in the energy sector, three of which are enjoyed by the oil and gas industry and one by the nuclear industry.[20] In contrast, clean energy tax credits are short-term and episodic.

Second, it was observed that the health and environmental costs associated with conventional energy sources are not reflected in the marketplace. If these costs, ultimately borne by society, were internalized in the price of various energy options, clean energy sources would be cost-competitive immediately. Health costs, the impacts of global climate change, and the costs of securing foreign sources of oil were mentioned among the external costs not currently reflected

in energy pricing. Water was also discussed as a resource that should be considered in evaluating the relative merits of energy technologies. Conventional electric generating sources require large volumes of water to operate.

Finally, it was noted that there are a host of ways in which existing laws and regulations create barriers to clean energy development. In particular, participants mentioned rules associated with those who can generate electricity and barriers to connecting to the grid. Georgia, for example, is one of five states that prohibit anyone other than a publicly regulated utility from generating electricity.

U.S. CLEAN ENERGY OPPORTUNITIES

Leadership in Clean Energy Innovation

It is widely recognized that the United States has been at the forefront of research and development of clean energy technologies and remains a world leader in this area. That said, U.S. leadership in the innovation arena is being challenged, especially by emerging economies in Asia. Experts from industry and the research community agree that a number of steps need to be taken to ensure that the United States maintains its leadership in clean energy innovation.

There is broad consensus that U.S. clean energy research and development funding should be significantly increased. Due to international competitive pressures, experts believe that the United States must make robust investments to maintain a pipeline of clean energy innovations that will allow the country to stay ahead of international competitors in terms of developing products that compete on cost and quality in the global marketplace. To succeed, U.S. research

and development efforts need to be funded on a consistent and long-term basis. Clean energy research and development has suffered as a result of frequent fluctuations in funding.

Participants welcomed recent initiatives in clean energy research, including the establishment through the Department of Energy of Energy Frontier Research Centers, Energy Innovation Hubs and the Advanced Research Products Agency-Energy (ARPA-E)*.The Department of Energy's Sunshot Initiative, which aims to make solar energy cost-competitive without subsidies by 2020 was cited as one example of an appropriate, performance-oriented research and development initiative.

Roundtable participants suggested that government research and development efforts need to be aligned more effectively with U.S. commercial interests and objectives. The National Laboratories and other research entities need to be accessible to businesses and university-funded research should also take account of the needs and interests of American industry. Research and development efforts should address innovation needs across the technology development spectrum, from basic research through manufacturing and operations.

Manufacturing

Most roundtable participants felt that there are a variety of opportunities for the United States in clean energy manufacturing, particularly in keeping a focus on the production of next generation technologies that harness domestic advantages, such as highly skilled labor. Underscoring this sentiment, Pew recently released results of a study on trade between the United States and China in key parts of the clean energy sector.

Our research showed that the United States held a $1.63 billion trade advantage with China in 2011 across three sectors: solar, wind and energy-smart technologies. We found that U.S. companies excel in production and sale of complex, high-margin, and performance-critical goods. This includes capital equipment for manufacturing solar panels and LEDs, specialty chemicals and materials needed for production of solar and wind products, as well as controls for energy systems. In short, our trade advantage with China is based in large part on national leadership in innovation.

Throughout the roundtable process, it was noted that in today's highly competitive environment, cost-effectiveness across the value-chain is imperative and therefore, domestic manufacturers are likely to have an advantage in U.S. markets. In turn, servicing of domestic markets should help U.S. manufacturers become more competitive in international markets.

Indeed, it is widely acknowledged that domestic manufacturing must be viewed as part of the innovation process. Commercialization and manufacturing of next generation technologies help identify opportunities for improved materials, new production processes and other advances which are not only needed to reduce technology prices but also can be export opportunities. In this regard, experts note that the U.S. research and development community must work more closely with manufacturers.

Domestic Deployment

Roundtable participants consistently noted the importance of stimulating domestic demand as a means of encouraging the development and success of the U.S. clean energy sector. A domestic demand signal will encourage private investors to provide the capital needed to spur U.S. innovation and manufacturing in the sector. It will also help to encourage domestic

manufacturing, as manufacturers prefer to be close to customers. In the wind industry, transportation costs and requirements necessitate close proximity between manufacturing facilities and wind farms. Several participants noted that U.S. manufacturers are disadvantaged by the fact that demand has been strongest in Europe and now in Asia. Ambitious national goals and targets for deployment of specific clean energy technologies have stimulated local industry in these regions.

Enhanced deployment of clean energy technologies in the United States is also expected to drive innovations by manufacturers and project developers as they seek to reduce costs and gain a competitive advantage. As noted previously, the experience curve associated with solar and wind suggests that enhanced production drives down the cost of a given technology over time.

More efficient use of energy in manufacturing, particularly natural gas, can also drive down costs and spur new investment that strengthens U.S. manufacturing competitiveness in clean energy and other sectors of the economy. Steel companies including ArcelorMittal, automakers like BMW, and even Las Vegas casinos have made significant investments in combined heat and power and waste heat to power technologies because they lower energy costs while providing greater reliability. The Oak Ridge National Laboratory has estimated that doubling U.S. combined heat and power deployment can attract $234 billion in new private investment and create one million new jobs across the country while lowering total energy use by 3 percent.[21]

By encouraging price declines and stimulating innovation, a domestic demand signal would allow the public sector to diminish its role in clean energy as the private sector position strengthens.

STRATEGIES FOR STRENGTHENING OUR CLEAN ENERGY FUTURE THROUGH GREATER INNOVATION, MANUFACTURE, DEPLOYMENT AND EXPORT

To be internationally competitive in the emerging clean energy sector, the United States' public and private sectors were advised by participants to work closely together to innovate, manufacture, deploy and trade the advanced energy technologies that consumers around the world want and need. Participants in the Pew roundtables were optimistic that an effective public-private partnership can be created to ensure that the United States is an effective and successful competitor in the global clean energy marketplace.

A plethora of public policy ideas exist for strengthening America's competitive success in the clean energy sector. However the consensus of stakeholders participating in our nationwide series of roundtables is that relatively narrow, straightforward and mutually-reinforcing steps should be pursued. There is broad consensus among these leaders that the U.S. government's role in the sector should be light, limited and time-bound—federal policy has helped bring clean energy to the cusp of market acceptance and now, with commercial success in sight, would be an unpropitious time to change course. Roundtable participants suggested policymakers consider adoption of the following measures to help enhance the competitive standing of the United States in clean energy.

Policy Recommendation #1: Set a Long-Term Goal for Clean Energy Deployment

Establishment of a clear, consistent and long-term goal for the development of clean energy (such as a Clean Energy Standard) was identified by roundtable participants as the single most important step that should be taken by policymakers to enhance U.S. industry in this sector. The

initiation of national goals corresponds to increased clean energy investment, manufacturing and jobs in the United States. Jeff Immelt, CEO of GE, said, "innovation and supply chain strength gets developed where the demand is the greatest."[22]

A national clean energy standard would help provide the long-term certainty needed for innovators to invent, investors to mobilize capital, and manufacturers to scale production. The resulting ramp up of a domestic supply chain of innovation and investment would, in turn, help continue the significant and sustained downward trajectory of prices for clean electric generating capacity – providing American consumers with an expanded menu of affordable electricity options and moving key clean energy technologies to grid parity (cost-competitiveness) with conventional energy sources. Price declines should, over time, allow the federal government to gradually reduce tax credits and other incentives intended to help the industry establish itself in the marketplace.

In developing legislation to establish a national clean energy standard, policymakers will consider a variety of design considerations. For example, the clean energy standard can be narrowly targeted toward renewable energy sources, or more broadly construed to include energy efficiency, carbon capture and storage technologies and cleaner-burning natural gas. The design of a national clean energy standard should also account for practical realities, such as different levels of clean energy potential in different regions. In addition, policymakers should consider adopting certain measures that encourage flexibility and lower costs, such as trading mechanisms and exemptions for small electric entities.

Policy Recommendation #2: Invest in Clean Energy Innovation

America has a clear advantage in clean energy innovation that must be maintained. Our competitive future hinges on the ability to maintain a pipeline of ideas and innovations for driving down the cost and ratcheting up the performance of advanced clean energy technologies.

The public sector has a special role to play in clean energy innovation because the intensity of international competition in the energy industry limits the ability of the private sector to undertake research and development. The U.S. national labs and university research capabilities provide the foundation for basic and applied energy research that is fundamental to developing advanced energy technologies in conventional and emerging sectors. Consistent and ample funding for federally-supported research at national laboratories and universities is essential to our long-term competitive position.

In recent years a broad variety of expert commissions and panels have looked at the scale and scope of U.S. energy research efforts. These have included the President's Council of Advisors on Science and Technology (PCAST); the American Energy Innovation Council (AEIC) comprised of distinguished American business leaders; and academic panels such as Harvard University's Belfer Center for Science and International Affairs. While there are different points of emphasis in the findings published by each of these panels, the overarching conclusion is the same – the United States is substantially underinvesting in energy research. The consensus view is that energy research and development funding should be increased by two to five times over the FY2012 level of $4.36 billion.[23]

Expert studies and our roundtable discussions demonstrate considerable support for the current direction and structure of both basic and applied U.S. energy research and development efforts.

Relatively new initiatives such as the network of Energy Frontier Research Centers for basic research and Energy Innovation Hubs for applied research are widely applauded. The Advanced Research Products Agency – Energy (ARPA-E) garners consistent high praise for its mission orientation and effective project priorities.

Policy Recommendation #2: Reinforce Incentives for Private Investment

Given the centrality of energy to the economic and security interests of the United States and the quality of life of the American people, government policy has long provided incentives to help advance energy development and services. More recently, the federal government has offered production and investment tax credits for qualified clean energy technologies. For all intents and purposes, these credits have been utilized primarily since the mid-2000s, when clean energy deployment reached commercially relevant levels. And they have worked – stimulating investment, deployment, manufacturing and helping drive the cost of technology down. But unlike some permanent tax incentives in other parts of the energy industry, the production and investment tax credits are clouded in uncertainty on an almost annual basis, creating a boom and bust investment environment that retards consistent progress.

To preserve the competitive viability and emergence of the U.S. clean energy sector, industry leaders urge policymakers to provide a long-term renewal of the production and investment tax credits. Several participants called for use of "shallow incentives" for technologies that are close, but need help getting over the line to cost-competitiveness. But participants in the roundtable process also noted that these tax credits cannot and should not go on forever.

With these considerations in mind, roundtable participants suggested that policymakers consider a multi-year but time-limited extension of the production and investment tax credits for clean

energy sources. In light of industry statements that cost-competitive clean generating capacity can be foreseen in this decade, an extension through 2020 would help foster cost-competitiveness, provide certainty and give industry the necessary lead-time to prepare for a post-subsidy world.

Policy Recommendation #3: Level the Energy Playing Field

There are a wide variety of economic, regulatory and legal barriers that favor incumbent technologies over those jockeying for a place in the marketplace. These barriers threaten the ability of new companies and technologies to gain a competitive foothold. Moreover, they block from consumers new technologies that can inject choice and competition, help lower prices and improve product offerings.

If barriers are eliminated, broader pools of private capital can be leveraged through innovative financing mechanisms that help lower the cost of capital. For example, master limited partnerships (MLP's) provide incentives for investors to help finance construction of domestic energy infrastructure. Investors can access these opportunities through equity markets and qualify for certain tax advantages. MLP's mobilize large reservoirs of low cost capital for oil and gas interests, but the law does not allow clean energy businesses access to these sources of finance.

There are also other advantageous legal arrangements that can be opened up to clean energy interests. At several of our roundtables, participants expressed support for allowing real estate investment trusts (REITS) to finance renewable energy projects. REITs are corporate entities that receive certain tax benefits in exchange for investing in income-producing real estate. These vehicles allow small investors to participate and mobilize large amounts of capital in real estate

development. By qualifying renewable energy infrastructure as an eligible source of REIT financing, any investor would be able to purchase shares in a portfolio of renewable energy projects.

Policy Recommendation#4: Support U.S. Clean Energy Manufacturing

Clean electric generation technologies represent an emerging opportunity for America's high-technology manufacturers. Industry and economic development leaders are pursuing a range of initiatives to spur manufacturing in the clean energy sector, such as enacting renewable portfolio standards that stimulate demand; helping innovators and entrepreneurs grow businesses; and creating clusters of scientists, investors and business leaders to transition ideas out of laboratories into businesses that are supported and nurtured to success.

The federal government can also play a role in fostering renewable energy manufacturing at this critical time in the emergence of the U.S. and global marketplace. In recent years, one of the primary efforts to stimulate clean energy manufacturing was the Advanced Energy Manufacturing Tax Credit, also referred to as Section 48C of the Internal Revenue Code, authorized in 2009 as part of the American Recovery and Reinvestment Act. In an attempt to supply clean energy projects with components made in the United States, the Section 48C program provided a 30 percent credit for investments in clean energy domestic manufacturing facilities capable of producing renewable energy equipment, energy storage systems, carbon dioxide capture and sequestration equipment, electric grids, energy conservation technologies, and other clean energy products. $2.3 billion in tax credits were granted to domestic projects for the 48C program, leveraging an additional $5.4 billion in private sector investment.[24] Experts also estimate that the tax credit directly created 17,000 jobs and that associated private

investment supported roughly 41,000 additional jobs.[25] More than 180 manufacturing projects were supported in 43 states. Applications for the 48c credit far exceeded the program budget, which was exhausted in 2010.

Earlier this year, the Department of Energy initiated the Clean Energy Manufacturing Initiative (CEMI), to help boost U.S. competitiveness and manufacturing in the sector. This innovative public-private partnership should also help build the domestic supply chain and our long-term economic success in the sector.

Policy Recommendation #5: Expand Markets for U.S. Clean Energy Goods & Services

Long-term forecasts of electricity growth and clean energy markets demonstrate that the vast majority of future investment will occur in emerging economies and developing nations.

Markets for clean energy goods and services will grow as nations work to close the gap between the energy "haves" and "have-nots". An estimated 1.5 billion people around the world currently lack access to modern electric services.[26] Billions more have only limited, intermittent electric service or rely on wood, charcoal, and diesel generators for heat and cooking. Collecting or purchasing this fuel is burdensome to the energy poor. And extending electric infrastructure is an enormously expensive proposition. Clean energy offers the opportunity for communities to leapfrog the era of electric wires in the same way that cell phones have allowed these same communities to bypass the era of hard-wired phones. In addition, some countries see opportunities in switching to renewable energy. Saudi Arabia, for example, plans to invest more than $100 billion in solar energy as a means of obtaining 30 percent of its electric needs through renewable energy over the next 20 years.[27]

In recent years, the United States has enhanced efforts to support renewable energy exports. According to the Department of Commerce, renewable energy exports increased from $1.3 billion in 2007 to $2.1 billion in 2009.[28] During that period, wind energy exports increased by 29 percent annually and biomass equipment and feedstock trade increased by 54 percent.[29]

To help coordinate and expand U.S. clean energy efforts as part of the National Export Initiative, the Trade Promotion Coordinating Committee, an interagency working group chaired by the Secretary of Commerce, has created a Renewable Energy and Energy Efficiency Export Initiative (RE4I). This initiative seeks to mobilize financing that supports exports by U.S. companies; open international markets to U.S. clean energy goods and services; and promote trade opportunities overseas. Twelve agencies participate in the RE4I initiative.

In recent years, some of the key export assistance arms of the U.S. government have stepped up efforts in the clean energy sector. The Export-Import Bank has dramatically increased its renewable energy portfolio, which doubled to $721 million between fiscal 2010 and 2011.[30] Likewise, the Trade and Development Agency has doubled its programmatic focus in the renewable energy arena. [31] And the International Trade Administration at the Department of Commerce has established a Renewable Energy and Energy Efficiency Advisory Committee to help bring private sector ideas into the federal government's export initiatives in the sector.

In view of the significant growth and potential of clean energy markets and emerging international trade issues in the sector, the United States Trade Representative has asked the International Trade Commission (ITC) to do a thorough review of the renewable energy services market.[32] The last ITC review of renewable energy and trade was conducted in 2004-05, when global investment was a fraction of what it is today. The ITC assessment, due to be completed

later this summer, should give U.S. government agencies and policymakers useful guidance on the scale of clean energy markets, key sectors for U.S. priority and priority export markets for U.S. industry.

CONCLUSION

After several decades in laboratories and niche applications, clean energy technologies are primed for accelerated and widespread expansion in the world's power sector. In the United States and around the world, solar, wind and other renewable energy sources will represent a significant share of the new generating capacity deployed in the coming years and decades. These technologies will also be in demand as the world addresses persistent and emerging local and global environmental challenges. Finally, we know that clean energy will be sought after in the push to achieve greater energy security.

For all these reasons, the future of clean energy is bright. Less certain is the forecast for the United States' competitive position in this fast-growing sector. On a variety of key measures – from innovation to manufacturing to deployment to exports – the United States is struggling to maintain a position of leadership in the global economic and technological race.

Discussions with industry and other experts across the United States reveal tremendous frustration about the inability of American interests to capitalize more fully on the emerging clean energy moment. Having invented and brought to market many of the prevailing clean energy technologies, U.S. scientists and entrepreneurs now find themselves are buffeted by disparate national and international forces.

The United States has a proud history of public-private partnership in advancing national competitiveness in key sectors – from railroads and automobiles to telecommunications and conventional energy sources. In view of current and projected investment trends, U.S. competitiveness in clean energy warrants similar priority and partnership.

Above all else, industry and other practitioners in the clean energy field desire some degree of long-term policy certainty. These leaders are highly confident of the ability of American industry to succeed as the clean energy marketplace expands at home and around the world – provided there is consistency and consensus in policy along the lines outlined in my testimony.

Policies that encourage the deployment, innovation, manufacturing and trade of clean energy technologies will help bolster the competitive prospects of American industry. In the process, these initiatives will enhance the nation's economic, environmental and national security prospects. The Pew Charitable Trusts is committed to working with public and private sector leaders to realize these goals.

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Mr. WHITFIELD. Our next witness is Mr. Drew Greenblatt, who is the president of Marlin Steel Wire Products.

And we appreciate your being with us, and you are recognized for 5 minutes.

STATEMENT OF DREW GREENBLATT

Mr. GREENBLATT. Thank you. Good morning.

The USA has hit the lottery. This energy blessing will create a lot of jobs. This is not controversial. This should be a unifying thing for our country to get behind.

My name is Drew Greenblatt. I am the president of Marlin Steel. We are based in Baltimore, Maryland. Marlin Steel is the leading manufacturer of custom-made wire baskets, wire forms, and precision sheet metal fabrications. We make 100 percent in the USA in Baltimore City.

We are a fast growing company. We have grown 7 years in a row, despite the recession. As a matter of fact, we are number 162 of all manufacturers, according to Inc. Magazine.

We use entirely recycled steel. And we export—and this is pretty cool—to China. We make it all in Baltimore. We use steel made in Illinois, made in Pennsylvania. And the thing I am most proud about is that we have gone 1,650 days without a safety incident. Twenty percent of my employees are mechanical engineers. And we succeed through innovation, investment. We have a wonderful team.

I am representing today the National Association of Manufacturers. One in six private sector jobs are in manufacturing. These are great jobs; $77,000 a year on average, including benefits. And this is much better than most—than the average American employee makes.

I bought Marlin Steel in 1998. We had $800,000 in sales and 18 workers. Last year was our most successful year ever. We had over $5 million in sales, and now we employ over 29 people.

One of the primary reasons for this growth is because of domestic energy production and these lower energy prices. There has been a lot of talk about economic growth out in the shale boom in North Dakota, Ohio, Pennsylvania, Texas, but this is starting to impact and trickle down to places that are not generating oil and petroleum, places like mine. Manufacturers across the country are benefiting from these lower energy prices and this increased industrial activity. We fulfill many orders that ship to the gas industry.

How has the boom helped us specifically? Two ways. Number one, lower costs. We are paying less money for the energy to heat the factory, for example. We are paying less money for powder coating, so we are more competitive when we compete head to head against China, when we compete head to head against Japan and Germany and Canada.

The second way is that it has increased our revenue; higher revenue. Higher revenue means more jobs. We are selling material handling solutions from steel wire baskets and sheet metal products to Schlumberger, Halliburton, Timken, and Caterpillar. This is what has propelled our growth.

We are also aware that recently President Obama visited one of our colleagues a mile away: Ellicott Dredges. They are doing great

because of the boom as well. They are making dredges for the Canadian oil sands.

Think about it. There is a new steel pipe plant being built in Youngstown, Ohio. When was the last time a steel mill has been built in Youngstown, Ohio? Something is going on, and it is great, and we should be embracing this.

For us, what happens is we hire unemployed local steel workers. We buy more robots. One of our robot makers is in Chicago; a second one is in Connecticut. We buy our steel from Illinois, from Indiana. We buy our steel from Pennsylvania. So it is—we are all in it together, and we are all growing together because of this wonderful fortune our Nation is blessed with.

In conclusion, abundant low-cost energy is changing the landscape of the global marketplace. It is well positioning us U.S. manufacturers for years to come. We are increasing production. We are expanding our employees. We are hiring more people. And these workers are buying things, and this is having a positive ripple effect throughout the economy. With continued production and the right policies in place, U.S. manufacturers will continue to be the drivers of economic growth and prosperity. Thank you.

Mr. WHITFIELD. Thank you very much, Mr. Greenblatt.

[The prepared statement of Mr. Greenblatt follows:]

TESTIMONY
OF DREW GREENBLATT
PRESIDENT AND OWNER
MARLIN STEEL WIRE PRODUCTS, LLC
ON BEHALF OF THE NATIONAL ASSOCIATION OF MANUFACTURERS

"U.S. ENERGY ABUNDANCE: MANUFACTURING COMPETITIVENESS AND AMERICA'S ENERGY ADVANTAGE"
JUNE 20, 2013
BEFORE THE

SUBCOMMITTEE ON ENERGY AND POWER
THE COMMITTEE ON ENERGY AND COMMERCE
U.S. HOUSE OF REPRESENTATIVES

JUNE 20, 2013

Chairman Whitfield, Ranking Member Rush and members of the Subcommittee on Energy and Power, thank you for the opportunity to testify before you at today's hearing, "U.S. Energy Abundance: Manufacturing Competitiveness and America's Energy Advantage."

My name is Drew Greenblatt, and I am president and owner of Marlin Steel Wire Products, LLC, based in Baltimore, Maryland. Marlin Steel Wire is a leading manufacturer of custom wire baskets, wire forms and precision sheet metal fabrication assemblies—all produced entirely in the United States. The customers for our material-handling solutions come from pharmaceutical, medical, industrial, aerospace and automotive industries all over the world. We

export to 36 countries. Twenty percent of Marlin Steel Wire's employees are mechanical engineers. Like so many other manufacturers in the United States that compete in a global economy, Marlin Steel Wire succeeds through innovation, investment and the hard work of our dedicated employees. The innovative ideas from the engineering team propel Marlin Steel Wire to success.

I am pleased to testify on behalf of the National Association of Manufacturers (NAM). I serve as a member of the NAM Board of Directors and as a member of its Executive Committee. The NAM is the nation's largest manufacturing trade association, representing 12,000 member companies consisting of small and large manufacturers in every industrial sector and state. As the voice of the 12 million men and women who work in manufacturing in the United States, the NAM is committed to achieving a policy agenda that helps manufacturers grow and create jobs.

The United States is the world's largest manufacturing economy, producing 18.2 percent of global manufactured products. Manufacturing in the United States alone makes up 12.2 percent of our nation's GDP. More importantly, manufacturing supports an estimated 17.2 million jobs in the United States—about one in six private-sector jobs. And these jobs are high paying. In 2011, the average manufacturing worker in the United States earned $77,060 annually, including pay and benefits—28 percent more than the rest of the workforce.

When I bought Marlin Steel Wire Products in 1998, we had about $800,000 in sales and 18 workers. Last year was our most successful one as a

business, with more than $5 million in sales. Today, we employ 29 people. One of the primary factors for our recent achievements has been the dramatic increase in domestic energy production and lower energy prices. There has been a lot of talk about economic growth from the shale boom in parts of North Dakota, Ohio, Pennsylvania and Texas, where new energy production is taking place, but some of the greatest benefits are filtering down to conventional factories across America, like mine. Manufacturers across the country are benefitting from lower energy prices and increased industrial activity driven by domestic energy production. We fulfill many orders for the gas industry.

Lower Energy Prices

Increased production of unconventional oil and natural gas is causing a quantum shift in U.S. energy markets, leading to lower, more stable energy prices. Energy is the lifeblood of U.S. manufacturing and even the slightest competitive advantage in the price of energy can make an enormous difference for companies that compete globally. Like all manufacturers, we benefit from the decreased production costs attributable to lower energy prices. Perhaps the most notable impact to a company like mine from lower energy costs is the benefit it brings to our customers: other manufacturers.

Lower energy prices have made many of our U.S.-based customers more competitive in the global economy, causing an increase in domestic demand for their products. As their orders increase, so do ours. Manufacturers across the country are expanding production and winning contracts that, even a few years

ago, they had little chance of competing for as foreign companies produced goods at lower costs. Now, it is U.S. manufacturers who find themselves able to produce more for less, and it is our competitors who are scrambling to keep up. More expansion and new orders for U.S. manufacturers have translated to more jobs and an improving economy, and for my company, more business. We have expanded our payroll and invested in high-tech equipment to keep up with the steady increase in orders from other U.S. manufacturers. Much of this success is attributable to the competitive advantage our customers are experiencing from lower energy prices.

While Marlin Steel Wire Products has already realized significant benefits from a U.S. manufacturing resurgence, I believe this is only the beginning. To date, much of the increased output from our manufacturing customers is attributable to ramping up production at existing plants. What we are starting to see now is the next evolutionary step from sustained low-cost energy: investments in new facilities by companies looking to increase capacity. Lower energy prices are bringing companies from around the world back to American soil, and with them, a surge of U.S. economic activity.

Energy prices have been a disadvantage for U.S. manufacturers at times, but now, because of the increased production of oil and gas and a commitment to an all-of-the-above energy policy, we are uniquely positioned for a manufacturing resurgence.

Energy Production

Along with the benefits of lower energy costs, expanded production of oil and gas is benefitting manufacturers throughout the production supply chain who make the extraction of energy resources possible. In December 2011, PricewaterhouseCoopers (PwC), with support from the NAM, released the report "Shale Gas: A renaissance in U.S. manufacturing?" PwC found that full and robust development of U.S. shale gas resources could create one million new manufacturing jobs by 2025. PwC also concluded that the benefits of shale gas would extend throughout the production supply chain. According to PwC, companies that sell drilling and power equipment were likely to experience a growth in sales. The same applied to companies that supply steel pipe and other materials for drilling equipment. Marlin Steel Wire Products, which serves customers in all of these industries, is also part of the oil and gas supply chain and a beneficiary of increased U.S. oil and gas production.

Other independent studies have made similar findings. The independent global energy research firm IHS CERA predicts that production of unconventional oil and natural gas resources will lead to $5 trillion in new capital investments and support 3.5 million jobs by 2035.[1] These economic benefits are not limited to the oil and gas sectors; about 80 percent of the jobs created will be the indirect or induced jobs generated from oil and gas production. Manufacturers of oil and gas machinery will need to increase their work forces to fill an uptick in orders, as will

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the makers of pumps and compressors for that machinery. In turn, the fabricators of metal and steel will also have to hire.

How the Boom Has Helped Marlin Steel

Marlin Steel has benefitted from the recent natural gas boom through lower costs and higher revenues. The price we're paying for natural gas to heat our plant in Baltimore is down 50 percent from the peak a few years ago; it was actually down 75 percent from the peak not too long ago.

We are also selling material-handling solutions from steel wire and sheet metal to clients directly involved in developing and extracting these sources of energy, companies such as Schlumberger, Halliburton, Timken and Caterpillar. The increase in activity has helped us become the 162nd fastest-growing private manufacturer in the country last year, according to Inc. magazine.

We are aware of fellow manufacturers who are similarly benefitting. Ellicott Dredges, a manufacturer located about a mile from us that President Obama visited last month, is building a dredge for a Canadian oil sands environmental project. A new steel pipe factory to serve the natural gas industry is being built in Youngstown, Ohio. When was the last time we built a new steel factory in Youngstown? The energy boost is contributing to our own purchases of steel from Indiana and Pennsylvania, to our need to add overtime for our workers in Baltimore and to our ability to invest in additional automation from robot makers in Illinois and Connecticut to bend wire and cut and shape sheet metal.

Conclusion

Abundant, low-cost energy is changing the landscape of the global marketplace, well positioning U.S. manufacturers for years to come. We are increasing production, expanding our customer bases around the globe and hiring more workers. Those workers buy stuff. With continued production and the right policies in place, U.S. manufacturers will continue to be the drivers of economic growth and prosperity.

Mr. WHITFIELD. And our final witness today is Mr. Andre de Ruyter, who is senior group executive for Sasol Limited.

And thank you for being with us, and you are recognized for 5 minutes.

STATEMENT OF ANDRE DE RUYTER

Mr. DE RUYTER. Chairman Whitfield, Chairman Terry, Ranking Member Rush, Ranking Member Schakowsky, members of the committee, thank you very much for the opportunity to be here today and present testimony. It is an honor.

Sasol is an integrated international energy and chemicals company. We employ about 34,000 people in 38 countries worldwide. We operate large-scale fuel and chemical plants throughout the world, and we are listed on the Johannesburg and New York stock exchanges.

We are not a stranger to the U.S. We have been doing business here for the past 20 odd years. We have headquarters based in Houston. We have also operations in that city, and furthermore, operations, plants in Arizona, in Louisiana, and also in the State of California.

The U.S., and Louisiana, in particular, offer a business-friendly climate with a predictable regulatory structure. More importantly, though, the U.S. shale gas revolution has created attractive opportunities for Sasol's investment into the U.S. market.

Sasol is uniquely positioned to monetize U.S. natural gas through our gas-to-liquids, or GTL, technologies, and consequently, Sasol announced in December 2012 that it was going to move forward with the next phase of investing in a world scale ethane cracker and gas-to-liquids facility in Westlake, Louisiana. It is estimated that the combined investment comprised by these two projects will amount to between 16 and 21 billion U.S. dollars. This will make it one of the largest foreign direct investments into manufacturing in the U.S. in history.

The ethane cracker is anticipated to produce some 1.5 million metric tons of ethylene per annum, with associated downstream ethylene products produced, and the GTL plant will be producing gas-to-liquids diesel as well as associated chemical products.

While natural gas is a major energy source for global power generation, it has up to now lacked the versatility to embrace transportation needs. With our proven GTL technology, we can fundamentally alter the chemistry of natural gas so that we can convert it to approximately 100,000 barrels per day of gas-to-liquids diesel for use in transportation, thereby maximizing in-country value add. And this contrasts with the technology of LNG, which essentially repackages natural gas for export to other countries as a form of energy.

Unlike other alternative fuels, GTL diesel is fully fungible with conventional diesel and requires no adjustment to engine technology or to distribution infrastructure. GTL diesel's high quality makes it highly suitable for use as a blend stock by crude oil refineries to upgrade their products into high quality fuels; however, when gas-to-liquids diesel is used neat, it has the added benefit of leading to lower emissions of particulates and other pollutants as a result of the fact that it contains essentially zero sulfur and very

low aromatic compounds. And this helps to improve air quality and meet emission mandates.

Although this GTL gas-to-liquids facility will be the first of its kind in the U.S., it is important to emphasize that this is not an experimental technology; this is not new. Sasol has been manufacturing fuel using essentially the same technology for more than 60 years. And together with our partner, Qatar Petroleum, we have produced more than 45 million barrels of diesel fuel for export into the international market since the commissioning of our ORYX gas-to-liquids facility in Qatar in 2007.

When we proceed with these projects, it will have a very substantial impact on the U.S. economy. We anticipate that we will create more than, 200 direct jobs, with an average annual salary of $88,000; 7,000 construction jobs will be created during peak construction. And this will in turn lead to thousands of indirect jobs.

Our commitment, however, goes beyond these projects and extends into the local communities, where we intend to continue to be a good neighbor and to conduct our business in a safe and socially and environmentally responsible manner.

The U.S. will also see increased tax revenues and GDP and an improved balance of trade.

Sasol's U.S. projects are a compelling example of how bilateral trade between Africa and the U.S. can yield substantial foreign direct investment into the U.S., which represents a win-win for both the U.S. and also the South African economies, and we are proud to be driving the next phase of our growth into the U.S. And we encourage Congress to continue to promote policies that stimulate the development of natural gas, and we really look forward to taking advantage of this opportunity.

Thank you, Mr. Chairman. I will take any questions.

Mr. WHITFIELD. Mr. de Ruyter, thank you very much.

[The prepared statement of Mr. de Ruyter follows:]

TESTIMONY OF
ANDRÉ DE RUYTER
SENIOR GROUP EXECUTIVE, GLOBAL CHEMICALS
AND NORTH AMERICAN OPERATIONS
SASOL LIMITED

BEFORE THE
SUBCOMMITTEE ON ENERGY AND POWER AND
SUBCOMMITTEE ON COMMERCE, MANUFACTURING, AND TRADE
COMMITTEE ON ENERGY AND COMMERCE
U.S. HOUSE OF REPRESENTATIVES

REGARDING
A COMPETITIVE EDGE FOR AMERICAN MANUFACTURING:
ABUNDANT AMERICAN ENERGY

JUNE 20, 2013

Chairman Terry, Chairman Whitfield, Ranking Member Rush, Ranking Member Schakowsky, and Members of the Committee, thank you for the opportunity to testify. It is an honor to be here with you today.

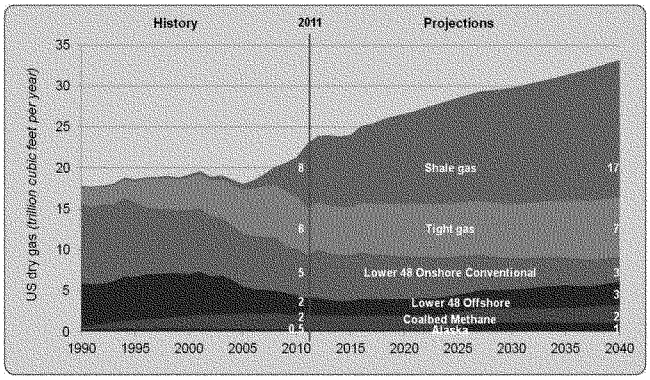
My name is André de Ruyter and I am Senior Group Executive for Global Chemicals and North American Operations for Sasol Limited.

Sasol is an international, integrated energy and chemicals manufacturing company that employs more than 34,000 people in 38 countries. We build and operate large-scale petrochemical facilities using proprietary and licensed technologies to produce a range of products, including liquid fuels, chemicals and electricity. Headquartered in Johannesburg, South Africa, Sasol is listed on the New York and Johannesburg stock exchanges (NYSE Euronext and JSE).

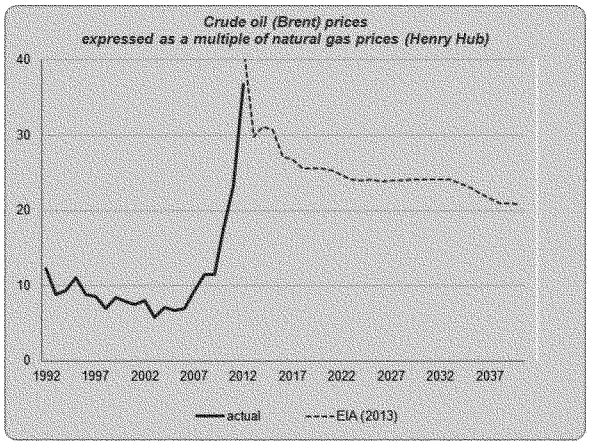
Sasol's U.S. headquarters are located in Houston, Texas, and our current U.S. operations are located in Westlake, Louisiana; Tucson, Arizona; Houston, Texas; and Richmond, California where we produce a range of chemical products for the domestic and export markets. Sasol is committed to U.S. operations that meet or exceed all applicable safety and environmental standards and provide a safe working environment for our employees, as well as being a good neighbor to the communities in which we operate.

The U.S. shale gas revolution, coupled with the current wide differential between gas and oil prices (which we anticipate to persist over the long term), have created attractive opportunities for Sasol's further growth and investment in the U.S. market. Specifically, the rapid

development of American natural gas resources drives the need to monetize and diversify the use of these resources, and Sasol is uniquely positioned to do so through our transformational gas-to-liquids (GTL) technologies.



Natural gas production by source, 1990-2040 (Source: Energy Information Administration 2013 Annual Energy Outlook)



Crude oil (Brent) prices expressed as a multiple of natural gas (Henry Hub) prices

The U.S., and Louisiana in particular, offer a business-friendly climate with predictable regulatory structures, which is a critical factor when evaluating capital-intensive business expansion opportunities. The U.S. Gulf Coast has a robust energy and chemicals industry with access to the best natural gas infrastructure in North America, a highly skilled workforce and tremendous depth of engineering resources.

Seizing on these opportunities, Sasol announced in December 2012 that we would begin front-end engineering and design (FEED) work for a world-scale ethane cracker and an integrated GTL facility, to be co-located on property adjacent to Sasol's existing chemical complex near the town of Westlake, Louisiana. We estimate the combined cost of these projects at between $16 and $21 billion, making it the single largest manufacturing investment in Louisiana's history and possibly one of the largest foreign direct investment manufacturing projects ever in U.S. history.

The world-scale ethane cracker will enable Sasol to expand its differentiated ethylene derivative business in the U.S. The facility will produce an estimated 1.5 million tons per annum (mtpa) of ethylene, helping to strengthen U.S. manufacturing, boost exports and spur economic growth. The ethylene produced in our chemical facility will be used to produce a range of high-value derivatives including ethylene oxide, mono-ethylene glycol, ethoxylates, polyethylene, alcohols and co-monomers that will further strengthen Sasol's position in the global chemicals market. The final investment decision (FID) for the ethane cracker and ethylene derivatives facility is expected to be taken in 2014.

The GTL facility, the first of its kind in the U.S., will be a game-changer for America's energy future. While natural gas has emerged as a major energy source in the global power generation market, it has, until recently, lacked the versatility to address other pressing energy needs, specifically transportation fuels. Now, with our proven GTL technology, for which Sasol is globally recognized as a commercial and technical pioneer, natural gas can be transformed into a range of high-quality fuels and chemical products.

Contrasted from liquefied natural gas (LNG), in which natural gas is essentially chilled to very low temperatures to facilitate transportation, GTL technology fundamentally alters the chemistry of natural gas so it can be converted into liquid fuels and chemicals, including GTL diesel fuel for transportation. Diesel will continue to be the workhorse of the global economy for the foreseeable future with demand expanded to grow 65% by 2040.[1]

Unlike other proposed alternatives to conventional petroleum-based fuels, GTL diesel is fully fungible with conventional diesel and can therefore be used neat or as a blend stock in existing diesel vehicles and in existing fuel delivery infrastructure without modifications. GTL diesel's high quality makes it an ideal blend stock for refiners to upgrade heavier products into higher quality diesel fuels.

Used on its own, however, GTL diesel is a cleaner-burning, next-generation fuel with significant environmental benefits. It's virtually free of sulfur and aromatic compounds, and its use in transportation - especially in older vehicles without advanced exhaust after treatment systems -

[1] Exxon Mobil. *The Outlook for Energy: A View to 2040*. Irving, Texas: March 2013.

reduces emissions of particulates and other pollutants, helping to improve ambient air quality and meet emission mandates.

Additionally:

- On a lifecycle basis, the greenhouse gas (GHG) emissions of GTL diesel are equivalent or lower than conventional diesel produced from refining of crude oil.[2]
- GTL diesel has a cetane number well in excess of 70, compared to the ultra-low sulfur diesel fuel specification in the U.S. of 40. High cetane number, low aromatic and highly paraffinic diesel fuels, such as GTL diesel, reduce the emission of oxides of nitrogen (NOx) and form the basis of low emissions diesel regulations as practiced in the states of California and Texas.
- A recent California Air Resource Board (CARB) study showed that GTL diesel has comparable or better emission characteristics as compared to conventional petroleum-based CARB diesel.[3]
- Sasol is currently working with the Argonne National Laboratory to estimate the GHG savings associated with blending GTL diesel in U.S. refineries.

GTL diesel has a number of performance benefits, including cleaner and more efficient combustion, improved cold start properties and reduced noise. GTL diesel's high cetane number also lessens buildup of deposits in the engine, which reduces wear and extends engine and lubricants life.

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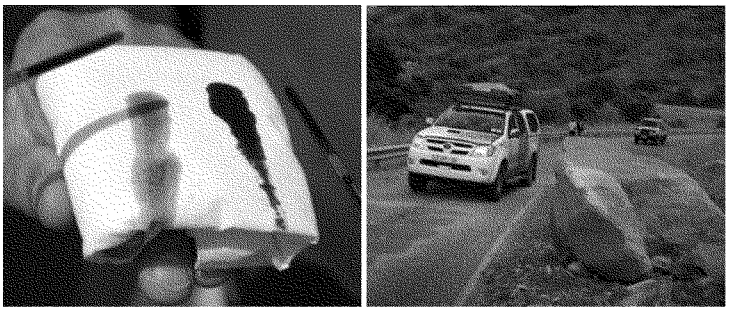
[2] Grant S. Forman, Tristan E. Hahn and Scott D. Jensen. *Greenhouse Gas Emission Evaluation of the GTL Pathway.* Environmental Science and Technology. American Chemical Society, September 22, 2011.
[3] California Environmental Protection Agency. *Discussion of Conceptual Approach to Regulation of Alternative Diesel Fuels.* February 15, 2013.



The oil from a vehicle fueled by GTL diesel, compared to the oil from an identical vehicle running on convention diesel, following an overland expedition from South Africa to Qatar.

Our GTL facility in Louisiana will convert natural gas into more than 96,000 barrels per day of product. The plant will consume approximately 1 billion cubic feet per day (Bcf/d) of natural gas, compared to average U.S. natural gas consumption of approximately 70 Bcf/d in 2012.[4] The current project costs for the GTL facility are estimated to be between $11 and $14 billion.

Approximately 70% of the production will be ultra low-sulfur GTL diesel, with naphtha and liquid petroleum gas (LPG) as co-products. The remaining 30% of production will be chemical products, including paraffin feedstock for linear alkyl benzene (LAB), wax products and synthetic base oils.

- Liquefied Petroleum Gas is a mix of hydrocarbon gases used as a fuel in heating appliances and vehicles, commonly sold as propane, butane or a mixture of both.

[4] Energy Information Administration. *Short-Term Energy Outlook 2013*. Washington: June 2013.

- GTL naphtha is a high quality liquid feedstock for cracking which could find application in this area, but is also an ideal diluent for heavy hydrocarbons such as are extracted from oil sands. Both of these are considered attractive market opportunities for GTL naphtha.
- GTL base oils are premium feedstock for the production of high quality synthetic lubricants that help engine manufacturers meet increasingly stringent fuel economy and emission standards.
- GTL paraffins are used in the production of LAB, a biodegradable chemical used in the detergents industry.
- GTL waxes have high purity and molecular linearity, making them ideal for use in the adhesives and polymers industries, and for production of industrial waxes and construction boards, as well as candles and personal care products.

Importantly, our proprietary GTL technology is not an experimental technology. It is fully proven and operating commercially today. In fact, Sasol has been producing liquid fuels and chemical products from natural gas and coal for more than 60 years. In partnership with Qatar Petroleum, we have successfully developed our first commercial scale synthetic fuel facility outside of South Africa – the ORYX GTL plant in Qatar - using natural gas as a feedstock. ORYX GTL, which is one third the size of what we intend to build in Louisiana, utilizes the same technology and is running reliably at about 106% of design capacity. The ORYX GTL facility has produced more than 45 million barrels of synthetic fuel since start-up in 2007, and with a world-class safety record (zero recordable incidents last year) it is the benchmark for Sasol GTL facilities worldwide.

Sasol's ORYX GTL facility in Ras Laffan, Qatar

We are currently advancing two other projects using Sasol's proprietary GTL technology in countries with abundant natural gas resources. The first is a partnership between Chevron and the Nigerian National Petroleum Company with the same capacity as ORYX GTL, and it is currently in the process of commissioning in Nigeria. The second is a partnership with Uzbekneftegaz and PETRONAS in Uzbekistan. We will be completing the FEED phase for this project during the second half of this year, which will enable us to make a final investment decision.

Beyond the benefits our products will bring to the U.S. energy and chemicals industries, these projects in Louisiana will have a significant impact on the U.S. economy.

With its combined cost estimated at between $16 and $21 billion, the GTL and ethane cracker projects together will create more than 1,200 permanent jobs with an average salary of $88,000, 7,000 construction jobs at peak construction, and thousands of indirect jobs in Louisiana and across the U.S. The total economic impact of the projects over the next 20 years has been

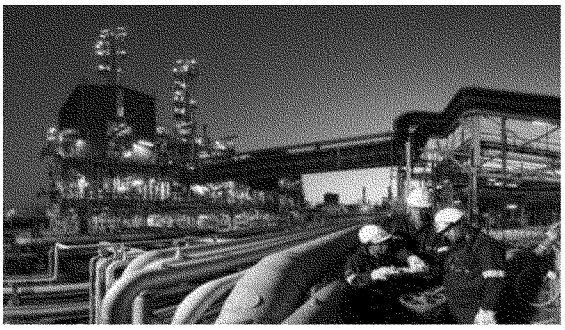
independently estimated at $46.2 billion, according to an economic impact study commissioned by Louisiana Economic Development and completed by the Louisiana State University Division of Economic Development.[5]

Further, our commitment goes beyond these projects and extends directly into the local communities. We intend to continue to be a good and caring neighbor and operate in a safe, socially and environmentally responsible manner.

The U.S. will also see economic benefits in the form of increased tax revenue, increased GDP, and improved balance of trade through substantial in-country value addition to natural gas.

In addition to the positive impact on the U.S. economy, the benefits of Sasol's U.S. projects will extend back home, where we will continue to grow and create value for our shareholders, 70% of whom are located in South Africa. Sasol's U.S. projects are a compelling example of how bilateral trade can yield substantial foreign direct investment in the U.S., which represent a win-win for both the U.S. and South African economies.

[5] Governor Bobby Jindal. *Governor Jindal and Sasol Announce Largest Manufacturing Investment in Louisiana History, Creating Over 7,000 Direct and Indirect Jobs.* Westlake, Louisiana: December 3, 2012.



Sasol's Secunda Facility in South Africa

Sasol is proud to be driving forward with the next phase of our strategic growth in the U.S. Through our innovative energy and chemicals technologies, we will provide the U.S. with world-class, cleaner-burning fuel, contribute to the country's energy security, boost downstream manufacturing capacity, and diversify the utilization of U.S. domestic gas resources.

We encourage Congress to continue to promote policies that enable industry to unlock the potential of America's clean, abundant natural gas resources, enhance domestic manufacturing and foster economic growth.

Again, thank you for the opportunity to appear before you today. I would be happy to respond to any questions.

Mr. WHITFIELD. And thank all of you for your testimony.

We have the farm bill on the House floor today, and we are going to be going to vote again soon, so we are going to allocate to every member 3 minutes for questions only. And so I would like to start my 3-minute time now. I am going to recognize myself for 3 minutes, but I am—before I—and on my questioning time, I am just going to make a few comments.

First of all, this is a very important hearing. We are seeing this renaissance of manufacturing in America, and we know that it is caused primarily because of low cost energy that has come about of the shale gas and shale oil finds that we have recently had. So, in order to keep this going and to address the job and the sluggish economy we have in the U.S., and I notice today the Federal Reserve board yesterday, I guess, said they are going to kind of stop our easy money policy, so we may see interest rates start edging up soon.

So the policies that the U.S. Government adopts are going to have a dramatic impact on the cost of energy. And energy costs are a key component for continuing to grow our manufacturing base and create jobs. And so when we talk about that, we are talking about the regulations, we are talking about an all-of-the-above energy policy, which many of you talked about specifically in your testimony, but I would remind everyone once again that the Obama administration says an all-of-the-above, but they systematically are trying to eliminate some fossil fuels, particularly coal.

And I notice—I was reading the Federal Register footnotes on the proposed greenhouse gas new source performance standard for new electric generating units. And in the register, it says the Department of Energy National Energy Technology Laboratory estimates that when that rule becomes final, that the technology that the coal industry would have to use to meet the emissions standards would add 80 percent to the cost of electricity; that one standard, 80 percent increase.

So we are all excited now and we feel good about these low energy costs, but as we move forward, we have to think about the policies and the impact, because I, for one, as many of you said in your testimony, do believe we need all of the above. Green energy alone is not going to get it done.

So thank you very much for your testimony. I look forward to working with all of you as we move forward.

And at this time, I would like to recognize the gentleman from Illinois, Mr. Rush, for 3 minutes.

Mr. RUSH. I want to thank you, Mr. Chairman.

We do have an incredible opportunity here to address both the threat of climate change and to secure U.S. leadership and U.S. jobs in a clean energy industry worth trillions of dollars.

Today's witnesses testified about how low-cost natural gas benefits the economy and is leading to a manufacturing renaissance in the U.S., but natural gas, Mr. Chairman, is not the only domestic energy source creating good manufacturing jobs in this country. Last year, the U.S. wind industry employed more than 80,000 Americans, including more than 25,000 in manufacturing jobs. The solar industry employed more than 119,000 U.S. workers, including more than 29,000 in manufacturing sectors. Many predict that the

clean energy sector will be the most important energy industry of this century.

And my question is directed to Ms. Cuttino.

Ms. Cuttino, how large is the global clean energy market, and how much is it anticipated to grow in the future?

Ms. CUTTINO. Well, thank you, Mr. Ranking member. Mr. Rush, most forecasters are saying that there will be between $5.9 trillion and $7 trillion that will be invested over the next 10 to 15 years in the sector. The International Energy Agency predicts that 50 percent of all new capacity additions across the world are going to be renewable. Other estimates are that it is as much as 70. Here in the United States, last year, 49 percent of the new installed capacity was renewable; 30 percent was gas. So together, these two things actually work very well.

So I think it represents a very significant opportunity, particularly as a country that has invented these technologies and can ship and export them and sell them around the world. Thank you.

Mr. RUSH. What role should Federal funding for advanced energy technology development play in rebuilding America's competitive advantage in clean energies innovation, and where should we focus our investment?

Ms. CUTTINO. Well, Mr. Rush, that is a very good question. We—in talking to clean energy leaders across the country, business leaders, have said time and time again that policy uncertainty is an impediment to their progress. It is the single largest factor that chills greater investment and deployment, export and manufacturing. This committee has heard many times business talk about uncertainty as it relates to regulations and policy, and clean energy is no different. It is just another form of technology.

So if we want to support this sector, and we should, we need to put together a long-term policy signal that will give investors the signal they need to invest, to move capital off the sidelines and for manufacturers to scale up and produce those technologies that we can sell around the world.

Mr. RUSH. Thank you.

I yield back.

Mr. TERRY [presiding]. Thank you, Mr. Rush.

Now I recognize myself for my 3 minutes. I appreciate all of you being here.

Since 2008, during the great recession, we lost over 5 million American manufacturing jobs. We are seeing an uptick. We have had—500,000 new jobs were created within the last year to 2 years, and a lot of them are in the industries that are heavy energy users, particularly natural gas. So it is interesting—or that is the purpose of having the hearing here. We want to see, A, is it the low cost of natural gas that is generating this resurgence in manufacturing jobs? Are there other reasons? And so I am going to kind of flip it over, the question here, and flip it over to the other side of the coin and ask, we have had the testimony about pro natural gas. What are the other obstacles that you have observed in your expansion within your own industry of any barriers, speed bumps, or whatever that maybe we can address?

Mr. Cicio, you go first, and then we will just go from my left to right. And make it quick.

Mr. CICIO. Speed bumps for energy-intensive manufacturers are many, including regulations. Regulations, for example, the industrial boiler MATS. Hugely expensive. Manufacturers in terms of the next speed bump are concerned about what happens to electricity costs as a result of EPA regulations on the electric utility sector that is forcing coal to gas, but the costs of those environmental regulations all get pushed onto us. In the future, regulations of greenhouse gases.

Mr. TERRY. Mr. Cordle.

Mr. CORDLE. Well, I will just echo the previous gentleman. I think regulations are an important part of something that we need to address. Drilling permits on Federal lands, onshore and offshore, we need to make sure that those are expedited and streamlined, as well as leaving the regulations of the extraction to the States. Thank you.

Mr. TERRY. Mrs. Cuttino, do you have anything? It is a little bit out of——

Ms. CUTTINO. Well, I would offer something positive, which is I think everyone on the panel and I would agree that one thing that our manufacturers need is support for industrial energy efficiencies, such as combined heat and power or waste heat recovery. This, as you know, reduces the cost of energy, and they are installed here in America by American labor, and they spur tremendous private investment as well as making all the products more competitive around the globe. So I think that is something that this committee could certainly support, is combined heat and power industrial energy efficiency.

Mr. TERRY. Mr. Greenblatt.

Mr. GREENBLATT. I agree with all the impediments that were just mentioned. Another big impediment is that it is a global economy, and we are competing against Canada. We are competing against Germany and Japan, and our tax rates are not competitive. We are in the 40 something percent, 70—40 percent tax bracket, and we are competing against Canada, which is at 15 percent. That is hard to welcome. We need your help to get a level playing field so we can grow jobs in Baltimore.

Mr. TERRY. Mr. de Ruyter, I am going to cut you off, because my time is gone, but I am only doing so because I know Mr. Scalise is very anxious to just talk to you.

At this time, I recognize the gentlelady from Illinois for her 3 minutes.

Ms. SCHAKOWSKY. Thank you, Mr. Chairman.

I wanted to ask you, Ms. Cuttino, there has been a lot of talk about all of the above, but in terms of Federal investment, how does, how do clean energy technologies compare to fossil fuel investments?

Ms. CUTTINO. Well, we have seen that certainly for incumbent technologies, there are permanent tax incentives in the code, some more than 100 years old, some more than 50 years old. By contrast, the investments or the tax incentives we have seen for clean energy technologies have been episodic at best, uncertain. And, you know, certainty is a word that everyone on this panel has said is critically important, leveling the playing field, reducing barriers. All of these issues apply for clean energy as well. So we need to have the same

assurances for clean energy as we do for the incumbent energy technologies.

Ms. SCHAKOWSKY. Thank you. I just want to use my remaining time in saying that this panel actually frightens me a bit and the discussion frightens me a bit. There will come a time in the future history not yet written of our planet where we say, whoa, when we had an opportunity to move toward clean energy, not just for the competitiveness of the United States or for the advantages of manufacturing, but for the ability of human life to survive on our planet, that we had an opportunity to really do something about this in a significant way.

The world can afford to burn, we are told, about 565 gigatons of carbon dioxide over the next 50 years before we reach 2-degree Celsius increase and disaster that could follow. And we already have, in terms of proven coal and oil and gas reserves, about 2,795 gigatons of carbon dioxide; in other words, about five times as much as we can actually afford to put into the atmosphere.

And I feel an obligation at this moment in history to my children and my grandchildren and future people on this planet that we need to shift toward clean energy technologies to prevent calamitous consequences in this world.

So, Mr. Greenblatt, I am happy that you have the jobs in Illinois, and I am happy that you embrace the idea that Ms. Cuttino talked about that we could be more energy efficient, but this idea now, hooray, we have got all of this, you know, natural gas, this abundance, we can be an exporter of fossil fuels to the world; we can be an exporter, make a lot of money by developing and exporting clean technologies, which are the technologies of the 21st century, I hope.

And I yield back.

Mr. TERRY. Thank you.

And now we recognize the—Mr. Scalise, you are recognized for 3 minutes.

Mr. SCALISE. I am sure you meant to say the gentleman from Louisiana, right, Mr. Chairman?

Mr. TERRY. The gentleman from——

Mr. SCALISE. I appreciate you yielding. And let me start by saying this panel excites me. I think the fact that we are here in a committee hearing in Congress talking about how technology and energy is revolutionizing our country, and not only creating tens of thousands of really good high-paying jobs, which is something that we ought to be focused on every single day, but also allowing our country to be energy independent. Here is one case where we have got the opportunity to reduce our dependence on, in many cases, Middle Eastern countries who don't like us, where we are spending billions of dollars to countries who use that money against us, to kill Americans in many cases. And so the revolution in energy is, I think, one of the most important things if we want to get our economy back on track, get our country moving again, create jobs and create the energy security I think that Americans expect and deserve. And so I think it is important that we talk about just what is happening in the real world with some of these new technologies in energy.

And, again, it is exciting to see what has happened. I know in my State of Louisiana, we have seen it in these shale plays and up at Haynesville shale, up in—north Louisiana, you drive up and down the interstates and you see trucks moving pipe, you see people working, you see very low unemployment, and we are creating American energy.

And again, I mean, if we want to have an economy—if we want everybody to live in squalor and poverty, you know, then we go with the old economy. If we actually want to create jobs and manufacture, make things in this country so that we can create jobs and increase everybody's lifestyle, not just in America, but in other countries, it starts with energy, and safe and secure energy, and that is what this is all about.

And so I want to shift it over to you, Mr. de Ruyter. You know, following the lead from my distinguished chairman, Mr. Terry, and he knew I had a number of questions, but I want to first thank you for the commitment that you have made to Louisiana and to America, because you could have put this plant, this liquefaction plant, the cracker in another country, too. You decided to do it in America; $21 billion of investment; those are great jobs, over a thousand jobs. And when you see what this all can do for our country, I want to ask you about the process right now. How is it going, and are there any impediments that are placed before you in the regulatory process that Congress can help remove so that you can get these jobs created quicker, so you can create this energy in America quicker?

Mr. DE RUYTER. Thank you, Mr. Scalise.

I think the two potential impediments that we see is, as some of the other panelists have remarked, is the need for regulatory certainty. We need to have a stable regulatory regime that is predictable and that we can anticipate to remain stable for the long term. Once we have that, I think we will be in a very good position to make these very large investment decisions.

I think as well what would be very useful is to the extent that we are dependent on various authorities for the granting of permits, we would like our applications—and I must stress that we are not asking for any waivers or exemptions. We intend to fully comply with all the environmental legislation, but we would like our permits to be considered and approved, to the extent that they comply, in an expeditious manner.

Mr. SCALISE. I think those are very reasonable requests, and we are fighting in this committee to try to create that certainty so that your company and so many others throughout this country can go and create those jobs and create that American energy. So thanks for what you are doing, for all of you on the panel.

And I yield back the balance of my time.

Mr. TERRY. Thank you, Mr. Scalise, or the gentleman from Louisiana.

At this time the chair recognizes the full committee ranking member, Mr. Henry Waxman. The gentleman from California is recognized for 3 minutes.

Mr. WAXMAN. Thank you very much, Mr. Chairman.

The United States pioneered many of the clean energy technologies being deployed around the world today, but in 2012, China

attracted more clean energy investment than any other country. In the United States, private investment in the clean energy market actually fell.

The clean energy technology market will be pivotal as the world moves toward a lower carbon global economy. It seems like the United States, once a leader in this market, is losing ground.

And Ms. Cuttino, your organization held a series of roundtable discussions with industry and experts that discussed impediments to clean energy investment in the U.S. What did these experts identify as the overriding impediment?

Ms. CUTTINO. Thank you, Mr. Waxman.

Their overriding concern was the policy uncertainty that they face in the current policy environment. They talked about a number of things, but that really was the biggest impediment to them being able to raise private capital, being able to scale up to manufacture. And, frankly, they have said, look, energy is a place where Congress has set goals in the past and——

Mr. WAXMAN. What makes China a safer bet than the United States right now in terms of clean energy investment?

Ms. CUTTINO. China leads the world in not only installed capacity, sir, but they also lead the world in terms of attracting private investment. This is—America used to lead the world, frankly. We created many of these technologies. And in a study that we conducted looking at the U.S.-China trade relationship, there are clear advantages that the United States has, advanced manufacturing, innovation, while China's advantages are really low cost assembly.

Mr. WAXMAN. But it all comes down to the uncertainty, the lack of consistent clean energy plan, and investors can't rely on policy to provide direction? Is that——

Ms. CUTTINO. Yes, sir.

Mr. WAXMAN [continuing]. What you found? Now, in your roundtable discussions with industry, did the participants identify EPA regulations as an impediment to investment in the United States?

Ms. CUTTINO. They did not.

Mr. WAXMAN. What about setting a carbon cap or putting a price on carbon? Would that provide clean energy investors with greater certainty about the purpose and direction of our energy policy? What were their views on that?

Ms. CUTTINO. That is certainly one policy that would provide certainty, sir.

Mr. WAXMAN. That is one. What else?

Ms. CUTTINO. Well, setting some kind of a clean energy or renewable energy standard. Opening up private pools of capital to clean energy the way that oil and gas can capitalize on them. This is Master Limited Partnerships, a real estate investment trust. Certainly providing longer term tax incentives to the production tax credit or the investment tax credit, the same kind of certainty that we have given to other incumbent technologies. And then investing, frankly, in energy R&D. As you know, this country has invested significantly in defense and health, but energy R&D is woefully low.

Mr. WAXMAN. Thank you very much.

Thank you, Mr. Chairman.

Mr. TERRY. Thank you, Mr. Waxman.

Now the chair recognizes the gentleman from Kentucky, Mr. Guthrie.

Mr. GUTHRIE. Thank you, Mr. Chairman.

First of all, as to the carbon cap, I think there would be more certainly for clean energy, because it would make incumbent energy more expensive, which is kind of what we are discussing here today, how America's energy boom has helped in manufacturing.

My family is in manufacturing, and I can tell you from firsthand experience, my father walked into a Ford plant as a union operator and ended up owning his own business. The pathway to the middle class for our family and for most families is right through the manufacturing floor. I mean, we have seen it throughout.

And in Kentucky, we have seen two—we are the number one aluminum State in the country and we used to be one of the top textile States in the country. And textiles in the 1990s moved offshore because it was high labor intensive. Aluminum has stayed in Kentucky, because it is high energy intensive. So our competitive advantage is, for the aluminum industry anyway, which is what my family is a part of, is that fact that we have cheap energy rates. Particularly in Kentucky, as a coal state. So I don't have coal in my district. I don't think I have a lump of coal in my district, but 94 percent of Kentuckians get their power from coal, and that has attracted the investment and jobs that pay $65,000 to $70,000 a year for hourly workers in the aluminum industry. And so it is very serious when we talk about raising the price.

And I would love to see clean energy be as competitive. And equalizing the tax and incentives, if one group gets it, I think that is a fair point to make. But raising the price of incumbent energy to get some other type of energy to be competitive is something that would concern me.

And I don't know if anybody wants to talk on specific regulations that you have dealt with, I know we had kind of in general with Mr. Terry, that you have dealt with that has actually—the EPA has done this, and it has raised the cost of your energy and made you less competitive.

Mr. CICIO. As a matter of fact, aluminum, about 35 percent of the cost of producing aluminum is the cost of electricity or energy. Relatively small changes to the price of electricity has an immediate impact on their competitiveness. And in Kentucky, for example—well, Kentucky or anywhere else, you find coal-fired power plants, you will find lots of manufacturers. Why? Because coal provides low cost BTU power. And we compete globally with all types of companies, including companies that are owned by sovereign states. So costs are everything. And EPA regulations on these coal-fired power plants and the proposed regulations, greenhouse gas regulations on new and existing facilities are of great concern.

Mr. GUTHRIE. And I know companies that looked at Mexico to invest, but the difference in energy did not make up for the differences in labor. So they are able to pay people higher wages because they are driven more by energy costs than they are by labor costs. And that is—anybody else have—I have only got 7 seconds. I guess I will yield back.

Mr. TERRY. The gentleman yields back. And we recognize Mr. McNerney, the gentleman from California, for 3 minutes.

Mr. MCNERNEY. Thank you, Mr. Chairman.

Mr. Cordle, briefly, if you would, just to satisfy my curiosity, how is the natural gas mostly used? Is it used as a chemical, as a solute? Is it used to create heat through burning, or is it used to create electricity? Just curiosity, so if you could give a brief answer, I would appreciate it.

Mr. CORDLE. In two primary ways. We use natural gas to fire our steam boilers in our chemical production facility.

Mr. MCNERNEY. Right.

Mr. CORDLE. And the overall lowering of that cost has certainly helped us dramatically. In the overall chemical manufacturing industry, it is a raw material, it is an ingredient in what we make in terms of our products.

Mr. MCNERNEY. So is that what most of the natural gas is used, as an ingredient in the product?

Mr. CORDLE. Well, the natural gas, when it comes out of the ground, it has several components. It has ethane, propane, and a few other things. And the ethane is the key raw material that is cracked and turned into ethylene, ethylene oxide, and then eventually it comes into polyethylene in the plastics that we use every day.

Mr. MCNERNEY. Thank you.

Ms. Cuttino, I am very sympathetic to your comment about predictability. I was in the industry for many years and I saw boom and bust cycles because the production tax credit and so on. We would lay off people and our suppliers would go away, and you would have to rebuild every cycle, all your suppliers. It is a very difficult—so I sympathize with that. I think we need to be sensitive to that here in the committee.

Could you tell me what advantages, what policy advantages that the fossil fuel industry has that the renewable industry does not have?

Ms. CUTTINO. Certainly. A couple of things. One, they have enjoyed the benefits of permanent tax breaks in—or tax incentives in the Tax Code.

Mr. MCNERNEY. Specifically?

Ms. CUTTINO. Oil and——

Mr. MCNERNEY. Specifically.

Ms. CUTTINO. Specifically? Oil and gas.

Mr. MCNERNEY. Tax breaks, which ones.

Ms. CUTTINO. Tax incentives. For oil and gas, it has been more than 100 years, for nuclear power——

Mr. MCNERNEY. What do the incentives look like? What specifically do the incentives look like?

Ms. CUTTINO. In total? More than $500 billion——

Mr. MCNERNEY. Let me——

Ms. CUTTINO [continuing]. Or what some estimates have been.

Mr. MCNERNEY. What do they look—what form do they take? What do the incentives look like?

Ms. CUTTINO. They take the form of tax incentives. I am sorry.

Mr. MCNERNEY. Right. Are they production tax incentives, or are they depletion——

Ms. CUTTINO. Yes. Yes. I am sorry. Exploration for extraction, yes.

Mr. MCNERNEY. Andre de Ruyter, on the GTL process, what is the energy balance of the GTL liquids; that is, energy in your product, divided by energy into the process and energy in the natural gas? What does the balance look like?

Mr. DE RUYTER. Thank you, sir. We use about 9.5 Bcf per day to produce 100,000 barrels of diesel per day. So you could work out the balance from that.

Mr. MCNERNEY. You don't have a number—a balanced number.

Mr. DE RUYTER. It is a ratio between gas—natural gas in and diesel out on the other side of the process.

Mr. MCNERNEY. Plus, energy into the process.

Mr. DE RUYTER. Well, that includes the consumption of the energy.

Mr. MCNERNEY. Mr. Chairman, I ran over already.

Mr. TERRY. Thank you.

Now the chair recognizes the gentleman from West Virginia, Mr. McKinley.

Mr. MCKINLEY. Thank you, Mr. Chairman.

In 3 minutes, we are going to have to run pretty quickly through this.

Ms. Cuttino, just quickly, with a question to you—and I like your comments about the clean energy technology and research. And you know, with National Energy Technologies Laboratories, they have been very focused on trying to get that accomplished. Yet you are aware that their research budget was cut by 41 percent. So when the President did that, would you agree with that?

Ms. CUTTINO. I think it is our opinion and the opinion——

Mr. MCKINLEY. It is a yes or a no.

Would you agree with the President to slash research, R&D, on fossil fuels?

Ms. CUTTINO. On fossil fuels or clean energy? We think——

Mr. MCKINLEY. Well, it is all one in the same. I am going to take that as a no.

Mr. Cicio, if we could run down with you quickly with this. In the 112th Congress, the EPA continually talked about during their hearings that they thought that more regulations were actually going to help the manufacturing industry. They suggested that for every million dollars spent in more comprehensive regulations, for each million, it created 1 and a half jobs. Would you agree that there are 1 and a half jobs created for every million dollars in new regulation?

Mr. CICIO. No. And I don't think any manufacturer would.

Mr. MCKINLEY. Mr. Cordle, your thoughts.

Mr. CORDLE. No, I wouldn't agree with that.

Mr. MCKINLEY. From yours, from Marlin Steel.

Mr. GREENBLATT. It would be a big job loser.

Mr. MCKINLEY. Thank you.

How about from Sasol?

Mr. DE RUYTER. I can't support that statement.

Mr. MCKINLEY. I am sorry?

Mr. DE RUYTER. I cannot support that statement that it will create more jobs.

Mr. MCKINLEY. Back also on uncertainty, we are trying to find a level of certainty. I agree. As a small business owner myself, we

were always searching for that. But now we have the issue of Obamacare coming upon us in our manufacturing.

Mr. Cordle, with 40 employees, you are faced with if you cross over 50, you are going to be meeting new guidelines or new requirements. How is your company adjusting to Obamacare?

Mr. CORDLE. Well, certainly, the cost of health care has gotten to the point it has been very difficult to make ends meet. I think right now a family plan costs over $3,000, and our company carries about 80 percent of that on behalf of the employee. And we have been seeing anywhere from 10 to 30 percent increases on an annual basis. I met last week with our insurance company for our union side—we employ steelworkers—and they are frustrated because they don't even have the rates.

Mr. MCKINLEY. Weren't you told it was going to decrease insurance costs?

Mr. CORDLE. I don't know how that relates to Obamacare, Mr. Congressman, but I can just tell you from my experience that health care costs in general are going to become very difficult on a small business.

Mr. MCKINLEY. My time is expired. I am sorry. Thank you very much.

Mr. TERRY. Thank you.

The chair recognizes the gentleman from Maryland for his 3 minutes.

Mr. SARBANES. Thank you, Mr. Chairman.

I want to thank the panel. I want to acknowledge Drew Greenblatt, who has a very successful business that he has described in Baltimore, and we are very proud of the work he has done in manufacturing.

There are a lot of issues that are packed in here. And, of course, we have less time than usual to address them all.

But the boom in natural gas exploration and production, of course, is presented as a real opportunity. Everything is relative when it comes to energy and the impact it has on our economy and on our public health and so forth. I had embraced the idea that natural gas is an important bridge from traditional fossil fuels, dirtier fossil fuels, toward a clean energy, renewable energy future.

The challenge is that the boom has produced now a scenario that is being embraced by many that this is sort of the end of our problems. That it will allow for ultimate energy independence for the country, and we may be less motivated to get across that bridge now to the other side in terms of a renewable energy portfolio in the future.

So I think that is where some of the anxiety from the boom comes from. Having said that, I certainly appreciate that the manufacturing sector sees a real benefit in the lower prices that are being generated from this and maybe as between having those prices increase, because we turn to an export strategy for that versus having them increase maybe because we move to some better way of capturing the impact of that on our environment, or we put more safety standards in place with respect to the industry. I guess most would choose the former.

But let me ask you, Mr. Greenblatt, you are certainly benefiting from the natural gas boom and the impact that is having. But I

would imagine you also over the long term aspire to take advantage of clean energy and renewable energy opportunities that may be able to be inputted into your operation. Maybe the pricing isn't there yet. But you are innovative enough and creative it. I imagine you have got that on the horizon. I thought you might want to talk about that.

Mr. GREENBLATT. We have explored it. It is something we would love to do. We have looked at putting solar panels on our roof. The math isn't there yet. It would be a wonderful thing for it to occur. But we are not there yet.

Mr. SARBANES. My hope, as I yield back my time, is that we can strike the right balance so that it is cost effective to pursue a number of these different opportunities and that we can safeguard, as I said, public health and other concerns that we have.

With that, I yield back.

Mr. TERRY. Thank you.

The chair recognizes the gentleman from Ohio, Mr. Johnson.

Mr. JOHNSON. Thank you, Mr. Chairman. I am going to move quickly here because I have got several topics I would like to address.

Mr. Cicio, I notice that you have a list of new projects listed in your testimony that could be at risk if the U.S. approves applications to export liquid natural gas to non-free-trade agreement countries. I was surprised by some of these companies that you listed, but one in particular caught my eye, and that is the Vallourec and Mannesmann factory, or V&M Star, expansion in Youngstown, Ohio. So my first question is, do you know what they make there?

Mr. CICIO. Of course.

Mr. JOHNSON. OK. They make the very steel and the tubes that are going to be used to transport liquid natural gas to market. They are going to benefit from the exporting of liquid natural gas. Why would you suggest that they are going to be hurt by the exporting of liquid natural gas?

Mr. CICIO. Well, my testimony, I guess, is not clear enough, but it says we are not opposing exports. It is how the DOE——

Mr. JOHNSON. Why do you list that company as one that is going to be hurt by the exporting of liquid natural gas?

Mr. CICIO. Because if you export a lot of natural gas, it increases the price of domestic natural gas and electricity.

Mr. JOHNSON. But the companies that make the materials that export the natural gas, they are going to benefit from this.

Let me move on. Because I don't want to get into a debate here. We have a fundamental disagreement.

Let me ask you this. You list a number of chemical projects that will actually benefit from increased natural gas production in your testimony. A recent ICF study projected that employment in the chemical sector would actually increase with LNG exports due to the need to process greater natural gas liquids. Do you agree or disagree with the ICF study and conclusions?

Mr. CICIO. We disagree.

Mr. JOHNSON. You disagree.

There are a lot of ethane cracker plants being planned all across the country. If all of the cracker plants get built, wouldn't the rest

of the natural gas users see increased prices for natural gas and ethane?

Mr. CICIO. If there is increased production of ethane, it doesn't—you will get residual increases of supply of natural gas, but not necessarily higher prices.

Mr. JOHNSON. I will take that as a yes.

There is a nearly an almost limitless supply of natural gas, if the Federal Government doesn't mess up the opportunity, and from a manufacturing perspective, if we aren't forced to use gas for power generation instead of cheaper coal. You mentioned that a little earlier. I would just suggest that your time and the time of your members would be better spent helping us make sure that the administration doesn't stamp out the coal industry, which is the most cost affordable, reliable form of energy on the planet.

With that, I yield back.

Mr. TERRY. Thank you, Mr. Johnson.

At this time, I ask unanimous consent that each side has one more set of questions. So the next person on both sides will be the last. Then we will close, gavel the hearing.

One more each side. Unfortunately, you got beat out by one, Gene.

Unless Ms. Matsui wants to split it with you.

Mr. GREEN. No, I don't want to take Doris' time. But I also know some of us have been here, and obviously, it is an important panel.

Mr. WAXMAN. Mr. Chairman, I object to the unanimous consent.

Mr. TERRY. The alternative is we will come back at 2:30.

Mr. WAXMAN. Let's go with the questions and see if we can get it done.

Mr. TERRY. Ms. Matsui, you are recognized.

Ms. MATSUI. Thank you, Mr. Chairman, and thank the witnesses for being here today.

As we continue the broader debate on energy exports, we must not overlook clean energy technologies and the strong role they will play in transitioning our country to a clean energy economy, mitigating climate change, and strengthening our national security. While exporting LNG is certainly an issue worth delving further into, I want to assure that it is just one piece of a larger export strategy, a strategy that also includes clean energy technology exports.

My home district of Sacramento is home to over 220 clean technology companies, many of which are small and medium-size, who are exploring ways to expand their businesses by exporting their products to foreign markets. However, unlike large companies, small businesses simply do not have the resources, time, and manpower to effectively promote their products abroad. They need proper assistance to compete in the international marketplace.

To this end, I have introduced the Clean Energy Technology Manufacturing and Export Assistance Act. This legislation would create an export assistance fund to help clean technology manufacturers navigate foreign markets. Additionally, it would develop and implement a national clean energy technology export strategy.

Ms. Cuttino, included in your testimony is a policy recommendation to expand markets to U.S. clean energy goods and services. Do you believe developing a national clean energy technology export

strategy would help achieve this goal, and what do you believe are factors that should be considered in any sort of export strategy and why?

Ms. CUTTINO. I absolutely think we ought to have a national strategy to export clean energy goods. Mr. Scalise earlier talked about American-made energy in Saudi Arabia or countries in the Middle East. We can export to these countries. Saudi Arabia is going to spend a hundred billion dollars on solar. And they ought to buy American-made solar. So there is a huge opportunity to do that. And I think any strategy ought to be to open up markets and to ensure that small businesses have the same access that large businesses do.

Ms. MATSUI. Thank you. So do our international competitors help their small- and medium-sized clean tech businesses facilitate exports to the United States?

Ms. CUTTINO. Yes, they do.

Ms. MATSUI. How can U.S. clean energy exports benefit the quality of life for people in emerging economies?

Ms. CUTTINO. One-third of the world's population is without electricity. And we are seeing a very aggressive push in many areas around the world. Distributed energy is already the best and cheapest option in many of these locations. We know that there is going to be a compound growth in areas of Africa, Latin America, and Asia, in terms of energy growth and clear energy investment. So we should be there and exporting to these emerging markets.

Ms. MATSUI. Thank you.

I think I yield back whatever I have.

Mr. TERRY. Thank you.

At this time the chair recognizes the gentleman from Colorado.

Mr. GARDNER. Thank you, Mr. Chairman.

Mr. Cicio, emerging reports from nonpartisan think tanks like BPC and Brookings are talking about and suggesting that it is domestic natural gas prices that will drive exports and not exports driving natural gas prices. So it is actually the natural gas prices will drive exports, not exports driving natural gas prices. Do you agree with that?

Mr. CICIO. Well, low natural gas prices relative to foreign markets, yes, will drive exports. Of course.

Mr. GARDNER. So, Mr. de Ruyter, do you agree with that?

Mr. DE RUYTER. Absolutely, I agree.

Mr. GARDNER. I just wanted to get that cleared up. And I would yield my time to Mr. Olson.

Mr. OLSON. I thank my colleague from Colorado.

Welcome to the witnesses. With the short time, I will attempt to curb my instincts as a Texan and brag about the Lone Star State. But here it goes.

I represent a suburban Houston district. We have 125 companies operating in the refining and petrochemical industries in Houston. The region is expecting $35 billion in new capital investments over the next 3 years. The construction from these investments will create over 100,000 jobs and contribute over $800 million in taxes. Those are big numbers, even for Texans.

I have a few questions about cheap natural gas bringing competitors, foreign companies, to our soil.

Mr. Greenblatt, I am thrilled to hear about the growth of your company in Baltimore because of increased shale gas production. I am wondering how to bring your business to Texas.

But I love the fact, too, you are exporting to China. Do you think foreign competitors, maybe one from China, will come and bring their operations to the United States due to lower energy costs and probably some favorable tax treatments from home countries?

Mr. GREENBLATT. I think lower energy costs is going to be a boon to, is going to create a boom in foreign direct investment. I think many companies will reposition and look at the globe and think of us differently and in a very positive way because of our cheap energy prices.

Mr. OLSON. Thank you.

Mr. Cordle, sir, could you discuss in a little bit of detail here, with the limited time, what the shale revolution means for foreign manufacturing here in the United States? Foreigners come to our country to manufacture.

Mr. CORDLE. Certainly. It has been a tremendous increase in investment in the United States. I believe BASF TOTAL are investing in your State, in Port Arthur, a billion dollar project. And we have had almost $70-plus billion in capital announcements in the last couple of years. This really is a game changer. Never before has the competitive playing field been tilted in our favor. It has always been the other way. And we need to put in the policies that will ensure that this is long-lived, it is real, it is here, and we appreciate what you are doing today, and the rest of the committee, regarding this issue.

Mr. OLSON. I am out of time. One final comment. Go Spurs.

Mr. TERRY. Object.

The gentleman from Texas, another prideful Texan.

Mr. GREEN. Well, thank you, Mr. Chairman.

Unlike my neighbor and colleague, it doesn't take a Texan too much time to brag about Texas.

I represent a district in the Houston area, and it at one time had the largest petrochemical complex in the country. Every one of our chemical plants in our district in East Harris County are announcing expansions.

I know one on the list that Mr. Cicio had was PetroLogistics. It took a mothballed chemical plant in our district and because of the propane coming off the Eagle Ford, and they were serving literally the market in the Houston area. But last year, they contacted me and wanted to know what they could do to get a carbon permit because States are not issuing them in Texas. You have to go to EPA. Because they wanted to double their capacity and get in the international market. So we are seeing that literally all over the petrochemical complexes, from the Mississippi River down to Corpus Christie, Texas.

I know, Ranking Member Waxman, I know China is expanding on their greener energy production. But they are also, they and India, are building 76 percent of the coal plants in the world. So China is doing everything. They are somewhat free enterprise. But we also know they are a command economy. So they can do things that we have to deal with typically with free market or with government assistance on a limited basis. Although some of my plants

think the EPA orders them around, but we do know there is an appeals process for that. And in China, there may not be that.

Mr. Cordle, are you seeing similar expansion in West Virginia like I am seeing in East Harris County?

Mr. CORDLE. Not to the scale that you are seeing, but we are very hopeful. We are working very hard as a State in an industry to attract foreign and domestic investments in the region. In the Kanawha River Valley we do, as you know, we have a rich tradition in chemical manufacturing.

Mr. GREEN. I noticed—in fact, I got to visit some of the chemical plants along the Ohio River, both in Ohio and in West Virginia. You mentioned the supply response for shale gas has directly created 46,000 jobs in the chemical industry due to expanded chemical production. What is the average salary for those jobs?

Mr. CORDLE. I believe we are around $77,000, $78,000 for those jobs.

Mr. GREEN. Must be nationwide. Because I know in my area, our work source talks about the average salary is about $86,000 for those chemical plant jobs and refinery plant jobs. Because they are also expanding.

What policies are needed to maintain the long-term, low-cost energy advantage? I understand that I have that industrial complex, but I also have a lot of service companies who actually continue to work, like Eagle Ford and all over the country, literally. But, for example, has the Federal Government made it difficult to use hydrofracking? What would that mean to some of your businesses?

Mr. CORDLE. In terms of hydraulic fracturing, I think the States are best suited to handle the regulation of that activity on the extraction side.

Mr. GREEN. Are we close to the time?

Mr. de Ruyter, one last question. You talked about the link to the gas-to-liquids facility that you are building in Louisiana. You also talked about Sasol currently operating, and you estimated the greenhouse gas savings associated with blending GTL diesel in U.S. Refineries. Has GTL technology ever been used here, and would our refineries have to add or update their equipment to handle it?

Mr. DE RUYTER. The refineries would not have to update or change their equipment. They can use it straight as a blend stock. In fact, it would improve the quality of traditional crude-derived diesel by blending in gas-to-liquids diesel.

Mr. GREEN. Has it ever been used in the United States?

Mr. DE RUYTER. Yes. We have in fact exported diesel to the U.S., and we have also supplied GTL jet fuel to the Department of Defense, who uses it for experimental purposes.

Mr. GREEN. I appreciate it. I appreciate the opportunity.

Mr. TERRY. Thank you, Mr. Green.

You have to say. I have a unanimous consent request to submit an article from E&E on "Exelon Blames Subsidized Wind Markets," article.

Hearing none, so ordered.

[The information appears at the conclusion of the hearing.]

Mr. TERRY. Now your job is done.

I want to thank our entire panel here. All of you were awesome and your testimony very informative.

Members have 10 days to submit their questions.

Panel, I would appreciate if we submit questions to you, that you answer them within a timely manner. Timely is not several months.

With that, we are adjourned.

[Whereupon, at 12:45 p.m., the subcommittees were adjourned.]

[Material submitted for inclusion in the record follows:]gs,d533

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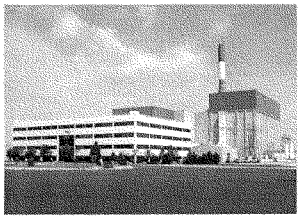
Exelon blames 'subsidized' wind, markets for derailing nuclear projects

Posted on 06/13/2013 by Greenwire



The LaSalle nuclear plant in Illinois. (Photo via NRC)

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By Hannah Northey

Exelon Corp. is scrapping expansion plans at nuclear plants in Illinois and Pennsylvania because of waning demand for electricity and competition with subsidized wind generators.

The country's largest owner of nuclear reactors announced Wednesday it would sideline plans to add capacity to its LaSalle nuclear plant 75 miles southwest of Chicago and its Limerick plant 20 miles northwest of Philadelphia in a filing with the Securities and Exchange Commission.

Exelon has added about 1,400 megawatts of power to the grid by conducting "extended power uprates" at its nuclear plants, a process that involves installing larger pumps and valves with greater capacity to increase a reactor's output by up to 20 percent.

That process at the LaSalle and Limerick plants, however, was derailed by market conditions and cheap wind, and Exelon has instead decided to take a $100 million hit in the second quarter, according to the filing.

"We removed these previously deferred extended power uprate projects from our program in response to market conditions and artificially depressed power prices resulting from subsidized wind energy," Exelon spokesman Paul Elsberg said in a statement. "Extended power uprates are large investments with paybacks toward the end of plant life, and in this instance, we decided that the risk involved did not provide the necessary returns."

Exelon has been front and center in the debate over whether the government should offer incentives for wind power, and last year was ousted from the American Wind Energy Association over its opposition to extending the production tax credit, a position that put it sharply at odds with the rest of the industry.

The utility's executives have said wind energy tax credits are allowing companies to give away power for free or at negative prices at a time when gas supplies are historically low. Such factors, Exelon has said, are making it harder for nuclear reactors to compete in competitive markets (*E&ENews PM*, Nov. 27, 2012).

Exelon is mainly concerned with the federal tax credit of 2.3 cents per kilowatt-hour, which has allowed wind generators to pay consumers to take their electricity at certain points of low demand and excess capacity, such as overnight.

The industry won a one-year extension to the PTC in January and is now focusing on a longer-term strategy that doesn't depend on the boom-and-bust reliance on federal support. Ongoing negotiations over comprehensive tax reform, which could include a PTC phaseout, are also a focal point (*Greenwire*, May 24).

AWEA took issue with Exelon's reasoning today. "Exelon continues to use wind as a scapegoat for its significant financial woes," said Rob Gramlich, AWEA's senior vice president of public

policy. "They made a losing bet on power market prices, which their earnings reports describe quite clearly. That is not a policy issue, it is a market issue unique to that company."

Even so, Exelon continues to have a strong position in nuclear power, and Elsberg said the company is still on track to add capacity at its Peach Bottom plant in Pennsylvania and its Braidwood plant in Illinois for an additional 200 MW by 2016.

This entry was posted in **News** and tagged **nuclear**, **wind** by **Greenwire**. Bookmark the **permalink [http://www.midwestenergynews.com/2013/06/13/exelon-blames-subsidized-wind-markets-for-derailing-nuclear-projects/]** .

Comments (5)

I'm curious, did Exelon foot 100% of the bill for these plants (and the insurance on them?)

By **Eric** on Jun 13, 2013

Nuclear energy is the kingpin of subisidies!
BILLIONS of dollars are paid by taxpayers to insure nuclear power plants.
BILLIONS of dollars are paid by taxpayers to pay for agencies that oversee nulear energy like the NRC, DOE, NNSA...
BILLIONS of dollars are paid by taxpayers to pay for labs dealing with nuclear energy like Los Alamos, etc.
BILLIONS of dollars are paid by taxpayers to pay for a nuclear storage waste site.
TRILLIONS of dollars will be paid by taxpayers to store nuclear waste for the 20,000 generations that nuclear waste is dangerous. TALK ABOUT LONG-TERM DEBT!
And this is just a partial list of subsidies the nuclear energy receives.

By **Ann** on Jun 13, 2013

Soon there will be lot of plugin & electric vehicles and they will need lot of electricity. So these uprates will be required in addition to few more nuclear power plants.

By **Max Reid** on Jun 13, 2013

"That process at the LaSalle and Limerick plants, however, was derailed by market conditions and cheap wind"
And this is a problem ??? Why ?????
They forgot to mention that the federal government is trying to subsidize nuclear with loan guarantees among other things, yet no one seems interested in building more.

By **Mark Odeen** on Jun 16, 2013

All of you who are claiming that Exelon's plants take subsidies don't realize that load guarantees and subsidies for nuclear only apply to NEW nuclear plants.
Exelon's plants were all built without ANY subsidies.
Nuclear power in the US has NO operating subsidies.
Nuclear pays for its own decommissioning fund, NOT THE TAXPAYERS. Nuclear manages their own decommissioning funds. Nuclear ALSO pays for its own spent fuel management fund to the government (although the government is horribly mismanaging that fund).
Current nuclear plants get NO subsidies.
If you are pro wind tax credit, you are anti nuclear and anti environment. That is the bottom line. These companies building wind are not only trying to snuff out the competition by selling negative, but they are building natural gas plants to back up their wind. WE ARE SUBSIDIZING NATGAS. Wind subsidies HARM the environment, they cause no emissions nuclear to come off line, cause natgas plants to come online (remember the ACTUAL efficiency of wind farms is around 25-35%, so that means the rest of the time low efficiency natgas is running), and skew market conditions for high efficiency plants. It also violates the free market conditions of the deregulated power grid, and causes a shift from long term price/energy stability to short term profits. This is not beneficial in any way.

By **allyall** on Jun 17, 2013

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