

## ORAL TESTIMONY OF FRED KRUPP

I'm honored to be here today.

The stakes couldn't be higher. On our current path, by the end of this century, Key West and the Everglades will be underwater. The American Southwest will be at risk of truly catastrophic droughts. And summers in Michigan will be like summers in Texas today. Those are some of the things we learn from the authoritative science report the US government put out in June.<sup>i</sup>

Yet I'm optimistic. My message is this simple:

- we can achieve strong emissions targets for 2020
- we can achieve those targets at low cost; and
- in meeting those targets, we can create new jobs and new businesses

**So my first point is: we can achieve strong emissions targets for 2020.**

This has been studied again and again. The EPA has looked at it. The Department of Energy has too. So has MIT. And so has McKinsey and Co.

These teams of experts have used different tools and made different assumptions. But they all come to the same conclusion: we *can* cut emissions in 2020 by 17 or 20 percent – or more – below 2005 levels.

**My second point is: we can reduce our emissions at low cost.**

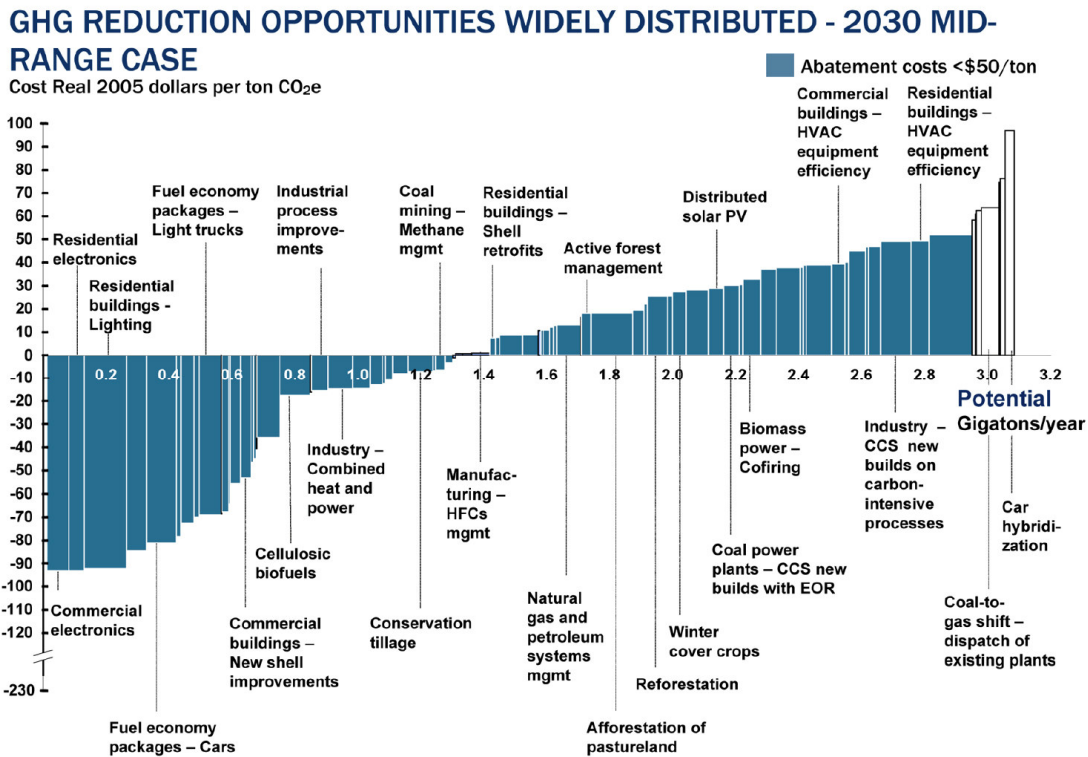
The EPA has done an exhaustive analysis of the House bill, H.R. 2454. The Agency found that, between now and 2050, the annual cost to the average household will be less than the cost of a postage stamp. And the poorest families will actually have a few more dollars in their pockets.

Just two days ago, the Energy Information Administration came to the same conclusion: the costs of the House bill will be very low. Between now and

2030, the EIA says the average household cost will be about 22 cents a day – about a dime per person.

Now, my third point is this: lowering our emissions will create new businesses and new jobs

One of the most important studies of how we can reduce our emissions was done by the respected consulting firm, McKinsey & Company. They looked at dozens of ways to cut our emissions. Here’s what they found:



Now, you can look at the bars of this graph as being different technologies.

But I prefer to think of each bar as a way for businesses to grow and create good, low-carbon jobs.

Let’s look at just one of these bars – the one called “Coal Power Plants – CCS New Builds With Enhanced Oil Recovery.” In fact, I want to talk about just one slice of that bar.

CCS means Carbon Capture and Storage. It means capturing the carbon dioxide from a power plant or factory and burying it deep underground.

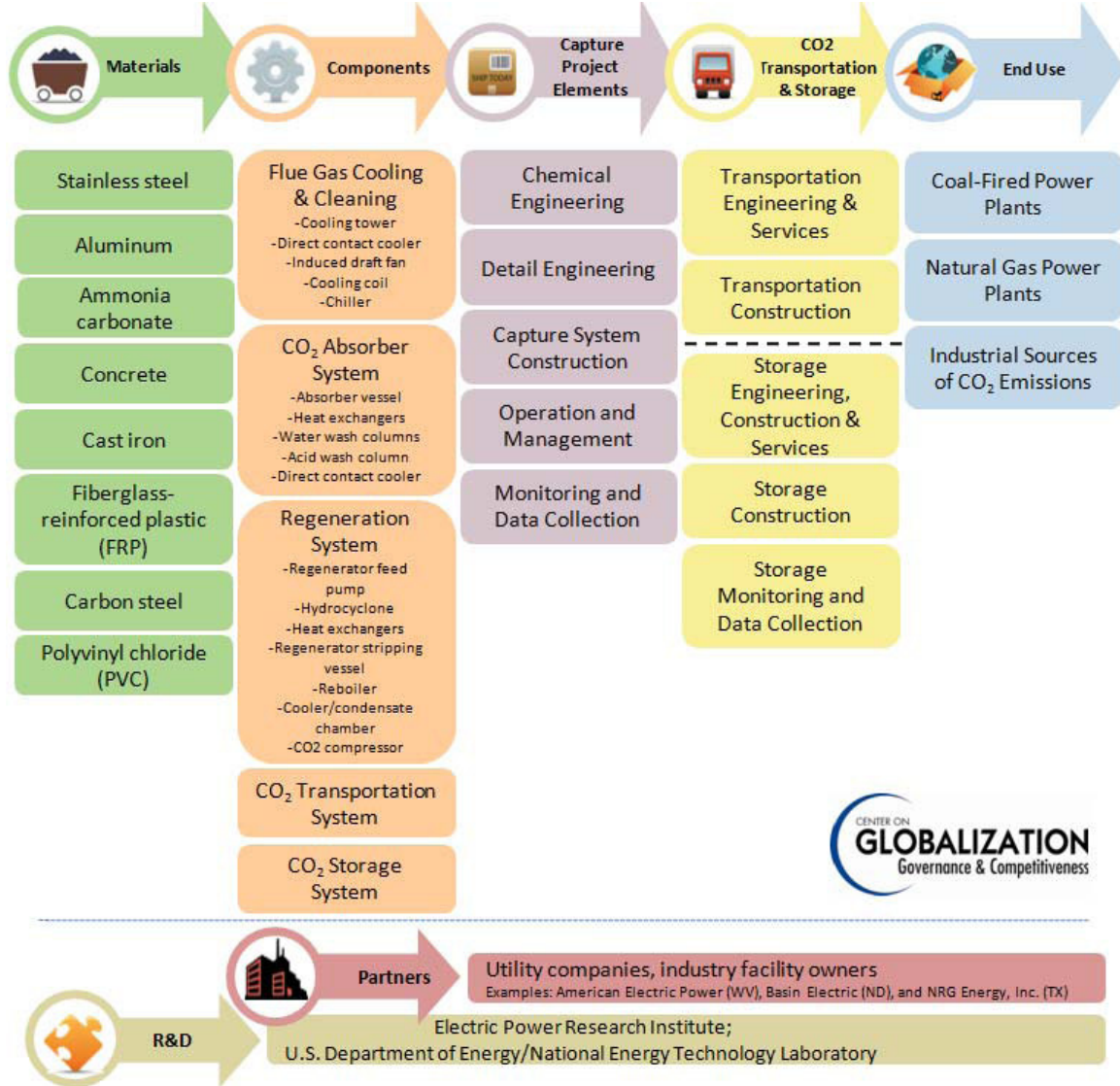
There are three main ways of capturing carbon dioxide. I'm going to focus on one of those, called the "chilled ammonia process."

A team of researchers at Duke University has been studying the supply chains behind 11 different low-carbon solutions.

One of those solutions is the chilled ammonia technology for capturing CO<sub>2</sub>.

You can see here what Duke found about this supply chain.....

## Simplified Value Chain for a CO<sub>2</sub> Capture Technology: The Chilled Ammonia Process



As you can see, there's a huge range of different businesses and people that will be needed to make the chilled ammonia process work.

Let me give you just a few examples:

We'll need ....

- miners
- steelworkers
- chemists
- pipefitters
- designers
- engineers – every type of engineer
- construction workers
- computer modelers
- geologists
- and factory workers to make the thousands of different components that will go into the finished product

Finally, let's take a look at some of the specific companies that are poised to play a role in creating this technology:

**Table 3: Chilled Ammonia Process Technologies with Potential Component Suppliers**

Component	Company	Location	Sales (USD mil)	Employees
Chiller	Berg Chilling Systems Inc.	Ontario, Canada	\$13.4	95
	General Air Products	Exton, PA	\$16.3	30
Cooling Tower	Amcot Cooling Tower Corp.	Ontario, Canada	\$3.4	10
	Baltimore Aircoil Co.	Baltimore, MD	\$17.5	200
	Delta Cooling Towers, Inc.	Rockaway, NJ	\$3.9	41
	EvapCo, Inc.	Taneytown, MD	\$102.4	4
	GEA Power Cooling, Inc.	Lakewood, CO	\$26.6	60
	SPX Cooling Technologies	Shawnee Mission, KS	\$187.9	325
Direct Contact Cooler	Belco Technologies Corp.	Parsippany, NJ	\$6.1	63
	Bionomic Industries	Mahwah, NJ	\$5.9	13
	Lodge-Cottrell, Inc.	The Woodlands, TX	\$1.0	5
	Alfa Laval, APV	Richmond, VA	\$323.2	250
Fan	General Air Products	West Chester, PA	\$3.5	40
	Lodge-Cottrell, Inc.	The Woodlands, TX	\$1.0	5
	The New York Blower Co.	Willowbrook, IL	\$27.7	200
Absorber	Twin City Fan & Blower Co.	Brookings, SD	\$75.6	300
	Alstom Power, Inc.	Chattanooga, TN	\$90.4	600
	Babcock Power Environmental	Worcester, MA	\$2.2	25
	Bionomic Industries	Mahwah, NJ	\$5.9	13
	Branch Environmental Corp.	Somerville, NJ	NA	NA
	Croll-Reynolds Co., Inc.	Parsippany, NJ	\$2.7	28
Heat Exchangers	GE Energy & Environmental Research	Irvine, CA	\$16.0	30
	Lodge-Cottrell, Inc.	The Woodlands, TX	\$1.0	5
	Alfa Laval, APV	Richmond, VA	\$323.2	250
	Babcock Power, Inc. Environment Division	Worcester, MA	\$2.2	25
	Des Champs Technologies (Munters Corp.)	Buena Vista, VA	\$30.1	235
	Luvata Grenada, LLC	Grenada, MS	\$278.8	2,800
Water Wash	Tranter Inc.	Wichita Falls, TX	\$19.3	204
	The Alstrom Corp.	Bronx, NY	\$1.6	20
	Belco Technologies Corp.	Parsippany, NJ	\$6.1	63
	Croll-Reynolds Co., Inc.	Parsippany, NJ	\$2.7	28
Hydrocyclone	Lodge-Cottrell, Inc.	The Woodlands, TX	\$1.0	5
	ChemIndustrial Systems, Inc.	Cedarburg, WI	NA	NA
Pump	FLSmith Krebs (Krebs Engineers)	Tucson, AZ	\$160.0	300
	Croll-Reynolds Co., Inc.	Parsippany, NJ	\$2.7	28
	FLSmith Krebs	Tucson, AZ	\$160.0	300
	Gould Pumps, ITT Corp.	Seneca Falls, NY	\$501.8	1100
Acid Wash	Belco Technologies Corp.	Parsippany, NJ	\$6.1	63
	Croll-Reynolds Co., Inc.	Parsippany, NJ	\$2.7	28
	Lodge-Cottrell, Inc.	The Woodlands, TX	\$1.0	5
Regenerator	Alstom Power, Inc.	Chattanooga, TN	\$90.4	600
	Croll-Reynolds Co., Inc.	Parsippany, NJ	\$2.7	28
	Enerfab, Inc.	Cincinnati, OH	\$206.7	330
Compressor	Atlas Copco North America, Inc.	Pinebrook, NJ	\$565.4	100
	Ingersoll-Rand Co.	Montvale, NJ	\$932.2	290
	J-W Power	Dallas, TX	\$10.4	120
	MAN Turbo Inc., USA	Houston, TX	\$93.3	24
	Ramgen Power Systems, LLC	Bellevue, WA	\$1.6	6
NH <sub>3</sub> Tank	Croll-Reynolds Co., Inc.	Parsippany, NJ	\$2.7	28
	National Tank Outlet	Olive Branch, MS	\$1.7	2
	Vector Systems	McKinney, TX	\$1.3	18
	Wahlco Inc.	Santa Ana, CA	\$27.3	106
Pipeline	Baker Hughes, Inc.	Houston, TX	\$10,428.2	35,877
	Denbury Resources	Plano, TX	\$972.0	686
	El Paso Corp.	Houston, TX	\$4,648.0	4,992
	Exxon Mobil Pipeline Co.	Baytown, TX	\$539.1	1,000
	Kinder Morgan Energy Partners	Houston, TX	\$9,217.7	7,600
Schlumberger Technology Corp.	Sugar Land, TX	\$2,011.5	1,957	

Source: CGGC, based on company websites, interviews, and industry sources.

As you can see, even looking only at component suppliers for this one specific solution, there are companies all over the country in the supply chain.

## **Conclusion**

Putting a ceiling on greenhouse gas emissions is an act of patriotism twice over. It's the right thing to do for our kids and grandkids. And it's the right thing to do to help American lead the clean energy revolution -- as it has led every other technological revolution of the past century.

The time to pass this law is by early December. That way, the United States can walk into the Copenhagen climate conference with a strong hand -- and negotiate a good treaty to save the world from dangerous climate change.

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<sup>1</sup> Global Change Research Program