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PAST, PRESENT AND FUTURE OF THE FEDERAL HELIUM PROGRAM; & H.R. 527, RESPONSIBLE HELIUM ADMINISTRATION AND STEWARDSHIP ACT

OVERSIGHT AND LEGISLATIVE HEARING

BEFORE THE

COMMITTEE ON NATURAL RESOURCES
U.S. HOUSE OF REPRESENTATIVES

ONE HUNDRED THIRTEENTH CONGRESS

FIRST SESSION

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OVERSIGHT HEARING ON "THE PAST, PRESENT AND FUTURE OF THE FEDERAL HELIUM PROGRAM"; AND LEGISLATIVE HEARING ON H.R. 527, TO COMPLETE THE PRIVATIZATION OF THE FEDERAL HELIUM RESERVE IN A COMPETITIVE MARKET FASHION THAT ENSURES STABILITY IN THE HELIUM MARKETS WHILE PROTECTING THE INTERESTS OF THE AMERICAN TAXPAYER, AND FOR OTHER PURPOSES. "RESPONSIBLE HELIUM ADMINISTRATION AND STEWARDSHIP ACT"

Thursday, February 14, 2013

U.S. House of Representatives

Committee on Natural Resources

Washington, D.C.

The Committee met, pursuant to notice, at 10:02 a.m., in Room 1324, Longworth House Office Building, Hon. Doc Hastings [Chairman of the Committee] presiding.

Present: Representatives Hastings, Lamborn, Wittman, Thompson, Lummis, Tipton, Labrador, Amodei, Mullin, Daines, Cramer, LaMalfa; Markey, DeFazio, Holt, Costa, Hanabusa, Cárdenas, Horsford, Huffman, Ruiz, Lowenthal, Garcia, and Cartwright.

THE CHAIRMAN. The Committee will come to order, and the Chair notes the presence of a quorum, which, under Committee Rule 3(e), is 2 Members.

The Natural Resources Committee is meeting today to hear testimony on the past, present, and future of the Federal helium program: H.R. 527, "The Responsible Helium Administration and Stewardship Act". That is what the topic of our hearing is today.

Under Committee Rule 4(f), opening statements are limited to the Chairman and the Ranking Member. However, I ask unanimous consent that any Member that wishes to have a statement in the record have it by the close of business today.

[No response.]

THE CHAIRMAN. And without objection, so ordered.

I now recognize myself for 5 minutes for an opening statement.

STATEMENT OF THE HON. DOC HASTINGS, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF WASHINGTON

THE CHAIRMAN. This Valentine's Day, many homes, restaurants and stores are decorated with pink and red heart-shaped balloons filled with helium. Now, this may be one of the best-known uses of this "higher-than-air" gas. The reality is that helium plays a large role in our daily lives and in our 21st century economy. Life-saving MRI machines, high-tech manufacturing, and national defense operations are all dependent on helium.

Unfortunately, unless Congress takes swift action, America will float off the helium cliff—pun intended—which will adversely affect American jobs and our economy. Stopping this disaster while simultaneously implementing reforms is the goal of today's hearing.

Since 1996, when Congress passed legislation to privatize the Federal helium program, we have been selling the helium in the reserve. Unfortunately, over the past half-decade, we have been doing so at severely less-than-market prices. This action hurts future resource development, it hurts conservation, and it hurts investment in research in alternatives, because of the depressed price.

Since the original decision to close the reserve, both the use and demand for helium has changed. This has created a situation where the reserve's debt, which was a goal of the 1996 Act, will be paid off sooner than expected, and that is expected to be in October of this year, and that will happen without having sold off all the helium in the reserve. By law, that 1996 law, the reserve will no longer have the authority to sell off its remaining helium, which will result in an immediate worldwide shortage because currently that reserve supplies about 30 percent of the world's helium supply.

So, I am pleased that, by bipartisan negotiation and a focus on market principles, Ranking Member Markey and I have developed a bipartisan plan, The Responsible Helium Administration and Stewardship Act, which is H.R. 527, to address the issues causing this helium crisis.

First, it recognizes the pivotal role that helium plays in our 21st century high-tech economy, and will prevent a helium shortage by keeping reserves open until nearly all of the helium supply is sold.

Second, and equally important, the bill will build upon reforms made in 1996 and inject free-market principles to get a fair return for the American taxpayers. Updates to the program must be made to more accurately reflect today's uses and demands for helium. New demands for helium have caused the market price to rise much higher than the Federal Government's pricing formula, and much faster than BLM's ability to track market prices.

Today we will hear updates from the Department of the Interior Inspector General and the Government Accounting Office, highlighting concerns that the low Federal price means that taxpayers aren't getting the best return for this resource.

In addition, current operations by BLM have restricted sales to only a few companies through an allotment system that appears to be an essential monopoly for Federal helium. The cheap price of Federal helium creates disincentives for helium users to invest in conservation and in recycling, and it gives unfair market advantage to the handful of companies that are allowed to purchase the helium. And it can depress exploration for new sources of helium.

So, H.R. 527 will implement a new operating system over the next decade that includes semi-annual helium auctions. These auctions will inject much-needed competition into the program and ensure that taxpayers are getting a fair return. The bill also includes important reforms to increase transparency and to prevent supply disruptions.

There are many who believe that the Federal Government shouldn't be in the helium business, and I would agree. But we are, and we have been since the mid-1920s. So, this bill is necessary to protect our economy from severe disruptions because helium is so essential to suddenly shut off the valve at the reserve. This bill recognizes that reality and builds into place critical reforms to sell off the helium in a much more responsible manner. This will prevent a potentially economically crippling shortage, and will ensure a better deal for taxpayers, and it will provide additional time for new development of alternative domestic helium resources so our country and our economy is prepared when the reserve does close.

So, I look forward to hearing from our three panels of witnesses today. And, with that, I will recognize the distinguished Ranking Member for his opening remarks.

[The prepared statement of Mr. Hastings follows:]

Statement of The Honorable Doc Hastings, Chairman, Committee on Natural Resources

This Valentine's Day, many homes, restaurants and stores are decorated with pink and red heart-shaped balloons filled with helium. While this may be one of the best-known uses of this lighter than air gas, the reality is that helium plays a large role in our daily lives and 21st century economy. Life-saving MRI machines, high-tech manufacturing and national defense operations are all dependent on helium.

Unfortunately, unless Congress takes swift action, America will float off a helium cliff—which will adversely affect American jobs and our economy. Stopping this disaster, while simultaneously implementing reforms, is the goal of today's hearing.

Since 1996, when Congress passed legislation to privatize the Federal Helium Program, we have been selling the helium in the Reserve. Unfortunately, over the last half decade, we have been doing so at severely less than market prices. This action hurts future resource development, conservation, and investment in research for alternatives.

Since the original decision to close the Reserve, both the use and demand for helium has changed. This has created a situation where the Reserve's debt, which was the goal of the 1996 Act, will be paid off sooner than expected (final payment is predicted to be October of this year), without having sold off all the helium in the Reserve. By law, the Reserve will no longer have the authority to sell off its remaining helium, resulting in an immediate world-wide shortage. Currently, the Reserve supplies 30 percent of the world's helium supply.

I'm pleased that through bipartisan negotiation and a focus on market principles, Ranking Member Markey and I have developed a bipartisan plan, the Responsible Helium Administration and Stewardship Act (H.R. 527), to address the issues causing this helium crisis.

First, it recognizes the pivotal role that helium plays in our 21st century, high-tech economy and will prevent a helium shortage by keeping the Reserve open until nearly all the helium supply is sold.

Second, and equally as important, the bill will build upon the reforms made in 1996 and inject free-market principals to get a fairer return for American taxpayers.

Updates to the program must be made to more accurately reflect today's uses and demands for helium. New demands for helium have caused the market price to rise much higher than the federal government's pricing formula and much faster than BLM's ability to track market prices. Today we will hear updates from the Department of the Interior Inspector General and the Government Accountability Office highlighting concerns that the low federal price means that taxpayers aren't getting the best return for this resource. In addition, current operations by BLM have restricted sales to only a few companies through an allotment system that appears to be an essential monopoly for federal helium.

The cheap price of federal helium creates disincentives for helium users to invest in conservation and recycling, it gives unfair market advantage to the handful of companies that are allowed to purchase helium, and it can depress exploration for new sources of helium.

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I look forward to hearing from our witnesses about this legislation and the need to update and reform the Federal Helium Program.

STATEMENT OF THE HON. EDWARD J. MARKEY, A REPRESENTATIVE IN CONGRESS FROM THE COMMONWEALTH OF MASSACHUSETTS

Mr. MARKEY. Thank you, Mr. Chairman. Helium is not just used to fill balloons. It is critical in MRI machines, NASA rockets, high-tech manufacturing, and various types of research. For many applications, there are simply no replacements for helium right now. So the looming national crisis for this important gas must not be taken lightly.

Our Nation's Federal helium reserve supplies nearly half of the helium used in the United States, and roughly a third of all the helium used globally. And right now there is a growing supply shortage. Some helium customers are already having their supply contracts canceled or reduced.

We are now facing two deadlines that could lead to even more severe helium supply shortages and price spikes. The first will occur later this year, when the Bureau of Land Management, which manages the reserve, will finish repaying the Treasury for the debt accrued while purchasing this helium stockpile. At that point, unless Congress acts, the BLM will no longer have the authority to continue operating the reserve and supplying this critical source of helium for the United States and for the world.

The second crisis is not as immediate, but potentially more severe. At current withdrawal rates, we have only five to seven years before the helium in the BLM reserve is largely gone. Reviews by the National Academies of Science, the Government Accountability Office, and the Interior Department Office of Inspector General have all concluded that we are likely currently selling our Nation's helium below market price.

Because the BLM supply comprises such an enormous percentage of the global supply, the price set by BLM controls the prices paid for helium globally. Artificially low prices for BLM helium, therefore, mean less incentive for private markets to make investments in new helium supplies, or to invest in conservation efficiency or alternatives. And it means taxpayers are getting shortchanged.

We must establish a helium pricing mechanism that sends a clear signal to private markets that alternative helium supplies are needed before we exhaust the BLM reserves. If we continue to float along under business as usual, we risk finding ourselves facing even worse supply disruptions or price spikes in a few years, when the BLM stockpile is depleted.

That is why I have partnered with Chairman Hastings and Energy and Minerals Subcommittee Ranking Member Rush Holt and Representative Bill Flores to introduce bipartisan legislation that seeks to address these impending crises. That legislation, H.R. 527, will extend the life of the reserve past the end of this fiscal year, ensure a fair return to taxpayers on this Federally owned helium resource, and widen participation and transparency in the helium market.

These principles are consistent with the recommendations made by the National Academies in 2010 to improve the program. Whether it is spectrum auctions or helium auctions, open and competitive markets are the best way to ensure stability and proper return for taxpayers. Helium comes from the Greek word "helios," which means sun. And it is time that we shine some sunlight on the helium market by creating transparency and openness.

The stakes from this impending national helium crisis for America's high-tech economy are very high. A competitive helium market can be the stable bridge that shifts America's helium reliance from the BLM reserve to private sources. We need to create that glide path. But if we fail to act, and float off this helium cliff, we may be forced to rely on insecure and irregular helium supplies from foreign countries, such as Russia, Algeria, or Qatar, and pay dramatically higher prices to meet American scientific and industrial needs. We should not let that happen.

This is an issue that should rise above partisanship. And, Mr. Chairman, I want to praise you for your leadership on this issue. This is something that really is central to our national security. And I am looking forward, as all our members are, on working on a bipartisan basis to find a solution.

[The prepared statement of Mr. Markey follows:]

Statement of The Honorable Edward J. Markey, Ranking Member, Committee on Natural Resources

Thank you Mr. Chairman.

Helium is not just used to fill balloons. It is critical in MRI machines, NASA rockets, high-tech manufacturing and various types of research. For many applications, there are simply no replacements for helium right now.

So the looming national crisis for this important gas must not be taken lightly.

Our nation's Federal Helium Reserve supplies nearly HALF of the helium used in the United States and roughly a THIRD of all the helium used globally. And right now, there is a growing supply shortage. Some helium customers are already having their supply contracts canceled or reduced.

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But if we fail to act and float off this "helium cliff," we may be forced to rely on insecure and irregular helium supplies from foreign countries such as Russia, Algeria, and Qatar and pay dramatically higher prices to meet American scientific and industrial needs. We should not let that happen.

This is an issue that should rise above partisanship, and I look forward to continue to working with you, Mr. Chairman, and Members on both sides of the aisle to move this legislation forward swiftly.

THE CHAIRMAN. I thank the gentleman for his statement, and I thank the gentleman for the compliment. This is something that was brought to our attention and I particularly want to thank the staff as they work together to develop this legislation.

We have three panels today, and our first panel is seated. And let me introduce them.

We have Mr. Tim Spisak, who is the Deputy Assistant Director of Minerals and Realty Management of the Bureau of Land Management within the Department of the Interior. Welcome.

We have Daniel Garcia-Diaz, National Resources and Environment of the U.S. Government Accountability Office. Welcome.

And last, but not least, we have Kimberly Elmore, the Assistant Inspector General for Audits, Inspections, and Evaluations, with the U.S. Department of the Interior.

If you have not been a witness here before, let me explain the timing lights here. You have 5 minutes. First of all, your full statement will appear in the record. And we would ask you to summarize and keep your remarks within 5 minutes.

The green light means that you are doing extremely well in your remarks.

[Laughter.]

THE CHAIRMAN. And when the yellow light comes on it means that you are down to one minute. And you don't want the red light to come on, it just simply means that your time is up. But if you can keep your remarks within that 5 minutes, that would be very, very helpful, because we do have a long day.

So, with that, Mr. Spisak, we will start with you. And you are recognized for 5 minutes.

STATEMENT OF TIMOTHY R. SPISAK, DEPUTY ASSISTANT DIRECTOR, MINERALS AND REALTY MANAGEMENT, BUREAU OF LAND MANAGEMENT, U.S. DEPARTMENT OF THE INTERIOR

Mr. SPISAK. Mr. Chairman, members of the Committee, thank you for the opportunity to testify on a Federal helium program and H.R. 527, "The Responsible Helium Administration and Stewardship Act". The bill would make various changes to the Helium Privatization Act of 1996, including establishing a phased approach to drawing down the Federal helium reserve.

As indicated by a National Academy of Sciences report published in early 2010, the market for helium has proven more volatile than expected over the last 15 years, and the requirement under the Privatization Act that the BLM offer to sell nearly all of the reserve by 2015 could negatively impact the availability of this important resource.

The Department of the Interior supports the goals of H.R. 527, and welcomes the opportunity to improve the management of this valuable resource.

Helium is a critical, non-renewable natural resource. The most common and economical way of capturing helium is by recovering it during natural gas processing. The BLM plays a key role in the management and stewardship of the only significant long-term storage facility for accrued helium in the world, known as the Federal Helium Reserve, which is located near Amarillo, Texas.

In 1929, the U.S. Bureau of Mines built the Amarillo helium plant and Cliffside gas field facility to produce a helium-bearing natural gas from a naturally occurred geologic field known as the Bush Dome Reservoir.

In 1960, the Congress granted the Bureau of Mines the authority to borrow funds from the U.S. Treasury to purchase and store helium with the expectation that the proceeds from the future sales of helium would allow the Bureau of Mines to repay the borrowing. However, compound interest and the Federal demand rarely met the expectations underlying the repayment terms of the Treasury's loan.

In 1996, the Congress passed the Helium Privatization Act, which required the BLM to offer for sale the vast majority of the stockpile of crude helium.

Today the BLM operates the Federal helium program with the primary goals of paying off the helium debt, which the agency anticipates doing at the beginning of Fiscal Year 2014, and providing the resource to meet public and private needs. While sales of the crude helium to private helium refineries make the most significant contributions toward paying off the helium debt, the BLM also manages the in-kind program, which supplies helium to Federal agencies and grant holders for operations and research through what are known as authorized Federal helium suppliers.

In 2000, the National Academy of Science published its first analysis of the impacts of the 1996 Act. Its general finding was that the Act would not have a material impact on helium users. In early 2010 the NAS released a follow-up report on the BLM's management of the helium reserve. The follow-up report concluded that the mandated sell-off is negatively impacting the needs of both cur-

rent and future users of helium in the United States. This conclusion is the driving force behind a series of recommendations in the report directed at the BLM and Congress.

H.R. 527 addresses many of the concerns that the 2010 NAS report identified regarding the Federal Government's involvement in the helium market. Most importantly, the bill would create a set of phased authorities for the BLM's management of the reserve, establishing a glide path from the sales mandated under the Privatization Act. The Department generally supports this approach to gradually scale back the Federal helium program.

More specifically, H.R. 527 stipulates 3 phases to the drawdown: the finalizing debt payoff; maximizing total recovery of helium and increasing returns to the American taxpayer; and, finally, the access for Federal users. It also requires that the sales of crude helium be conducted at auction and that the BLM disclose certain information related to the helium market and supply chain.

The Department looks forward to discussing these issues further with the sponsors and the Committee, and we would also like to work with the Committee on some technical modifications to the bill.

H.R. 527 would require the Secretary of the Interior to complete several reports and studies on helium, some in coordination with the Secretary of the Interior.

Thank you for the opportunity to present testimony on the Federal helium program and H.R. 527. The BLM welcomes further discussion about the Federal helium program and BLM's role in meeting future needs for the country. I would be happy to answer any questions the Committee may have.

[The prepared statement of Mr. Spisak follows:]

Statement of Timothy R. Spisak, Deputy Assistant Director, Minerals and Realty Management, Bureau of Land Management, U.S. Department of the Interior

Mr. Chairman and members of the Committee, thank you for the opportunity to testify on the Federal helium program and H.R. 527, the Responsible Helium Administration and Stewardship Act, which would make various changes to the Helium Privatization Act of 1996, including establishing a phased approach to drawing down the Federal Helium Reserve. Because the bill was introduced just one week ago, the Department of the Interior has not had time to conduct an in-depth analysis, but we appreciate the opportunity to outline our general views at this time. As indicated by a National Academy of Sciences (NAS) report published in early 2010, the market for helium has proven more volatile than expected over the last 15 years and the current law's requirement that the Bureau of Land Management (BLM) offer for sale nearly all of the Reserve by 2015 could pose a threat to the availability of this resource for future U.S. scientific, technical, biomedical, and national security users of helium. The Department supports the goals of H.R. 527 and welcomes the opportunity to improve the management of this valuable commodity.

Background

Helium is a critical, non-renewable natural resource that plays an important role in medical imaging, space exploration, military reconnaissance, fiber optics manufacturing, welding and commercial diving. According to the NAS, helium's best known property, being lighter than air, means "that every unit of helium that is produced and used today will eventually escape the Earth's atmosphere and become one less unit available for use tomorrow."

The most common and economical way of capturing helium is by stripping it from natural gas during gas production. Geologic conditions in Texas, Oklahoma, and Kansas make the natural gas in these areas some of the most helium-rich in the United States, ranging from 0.5 to 1.5 percent of the gas extracted during produc-

tion. The BLM plays a key role in the careful management and stewardship of the only significant long-term storage facility for crude helium in the world, known as the Federal Helium Reserve (Reserve), which supplies approximately 42 percent of domestic demand and approximately 35 percent of global demand for crude helium.

The Federal Helium Program

Because of helium's potential to lift military reconnaissance devices high above battlefields, the Federal government's interest in the resource dates back to World War I. Recognizing this key military use for helium, the Mineral Leasing Act of 1920 reserved to the Federal government all helium produced on Federal lands—a reservation that remains in effect today. After World War I, recognition of the potential for helium recovery in the Texas Panhandle, Western Oklahoma, and Kansas area (collectively, the "Hugoton" field) led to the development of the Federal helium program focused in that area. In 1929, the Bureau of Mines built the Amarillo Helium Plant and Cliffside Gasfield Facility near Amarillo, Texas, to produce helium-bearing natural gas from a naturally occurring geologic field known as the Bush Dome Reservoir.

After World War II, Federal use of helium shifted toward applications related to space exploration, and in 1960 Congress passed the Helium Amendment Act. This Act changed the program's mandate from exclusive government production of helium to conservation of the resource by executing contracts with private natural gas producers to purchase extracted crude helium for the Federal government to store in the Bush Dome Reservoir. The Act granted the Bureau of Mines the authority to borrow funds from the U.S. Treasury to purchase the helium, with the expectation that the proceeds from future sales of helium would allow the BLM's predecessor agency in this area, the Bureau of Mines, to repay the debt. This borrowing authority, established by Congress in lieu of a direct appropriation, required the Bureau of Mines to repay the loan by 1985. Subsequent legislation extended the deadline to 1995.

Federal demands for helium rarely, if ever, met the expectations underlying the terms of the Treasury's loan to the Bureau of Mines. When the 1995 deadline to pay off the debt arrived, the $252 million the Bureau had spent on privately-produced helium had increased to $1.3 billion (principal and interest), and the Bureau of Mines appeared to have little prospect of ever repaying the debt. In his 1995 State of the Union address, President Bill Clinton stated that it was his Administration's goal to privatize the Federal helium program.

Congress subsequently passed the Helium Privatization Act of 1996 (HPA), which required the BLM (which assumed jurisdiction over the program after the termination of the Bureau of Mines) to make available for sale the vast majority of the stockpile of crude helium. The mandate directed the BLM to begin selling helium no later than 2005, in order to avoid market disruption. The BLM was to make a consistent amount of helium available every year at a price based on the amount of remaining helium debt and the amount of helium in storage. When Congress passed the HPA, there was approximately 30.5 billion standard cubic feet (scf) of helium in storage in the Bush Dome Reservoir. The HPA mandated the BLM to make available for sale all of the helium in excess of a 600 million scf permanent reserve.

Additionally, the HPA required the BLM to cease all helium production, refining, and marketing activities to effectively privatize the refined helium market in the United States. Finally, the Act provided for the NAS to review the impacts of the 1996 Act. The NAS published its first study in 2000, and released a follow-up report in 2010.

The BLM's Helium Operations

The BLM currently operates the Federal helium program with a primary goal of paying off the "helium debt." To this end, the BLM has paid approximately $1.33 billion to the U.S. Treasury since 1995. This constitutes substantial progress toward eliminating the helium debt, which the HPA froze at approximately $1.37 billion. During FY 2012, $180 million was paid toward the helium debt from Reserve sales, resulting in an outstanding balance of approximately $44 million at the end of the fiscal year.

According to the HPA, once the helium debt is retired, the Helium Production Fund (used to fund the BLM's helium program operational expenses) would be dissolved and all future receipts would be deposited directly into the general fund of the U.S. Treasury. The BLM expects to generate enough revenue during this fiscal quarter through currently authorized helium sales to pay off the debt at the beginning of FY 2014.

The BLM's current helium program, with a workforce of 51 full-time equivalents (FTE), operates not only the original storage and pipeline system, but also a crude helium enrichment unit, owned by private industry refiners, that facilitates transmission of helium to private helium operations on the BLM's helium pipeline. The BLM is responsible for administering helium extracted from Federal resources, including management of fees and royalty contracts. These operations are not limited to the Hugoton gas field, but also occur in fields in Colorado, Wyoming, Utah, and any other state where producers extract helium from the Federal mineral estate. Additionally, the BLM is responsible for administering the sell-off of crude helium to private refiners. These sales make the most significant contributions toward paying off the helium debt. The agency also conducts domestic and, to a lesser extent, international helium resource evaluation and reserve tracking to determine the extent of available helium resources.

Another major part of the BLM's helium program is the "In-Kind" program, which supplies helium to Federal agencies (e.g., the Department of Energy and the National Aeronautics and Space Administration) for operations and/or research. Before the Helium Privatization Act, Congress required Federal agencies to purchase their helium supplies from the Bureau of Mines. Under the current In-Kind program, Federal agencies purchase all of their refined helium from private suppliers who, in turn, are required to purchase an equivalent amount of crude helium from the Reserve. In FY 2012, Federal agencies purchased $10.3 million of helium through the In-Kind program.

The National Academy of Sciences Reports

In 2000, the NAS published its first analysis of the impacts of the HPA. Its general finding was that the Act would not have an impact on helium users. Additionally, the NAS report concluded that because the price-setting mechanism was based on the amount of the helium debt, and not the market for helium, the government's significantly higher price would mean the helium refining industry would buy crude helium from the BLM only as a last resort for fulfilling private contracts. However, private helium refiners would still be required to purchase crude helium from the BLM under the In-Kind program.

Over the course of the last decade, however, it has become apparent that assumptions underlying the 2000 NAS Report did not hold. First, the NAS's assumption that "[t]he price of helium [would] probably remain stable through at least 2010" has proven faulty. The market for helium has seen significant fluctuations on both the demand side—which dropped significantly in 2008 after peaking the prior year—and on the supply side, which experienced a significant decline in private supplies between 2006 and 2008. In the face of this volatility, prices for helium rose steadily over the course of the decade. By 2008, the market price for helium began to hover near the BLM's price, leading to greater withdrawals from the Reserve than the 2000 NAS Report anticipated.

Another market impact that the 2000 NAS Report did not address was international supply and demand for helium. According to the U.S. Department of Commerce, domestic consumption of helium decreased 2.7 percent per year from 2000–2007, while exports to the Pacific Rim grew 6.8 percent annually, exceeding the 5.1 percent growth rate in Europe. The international market also experienced supply issues because of refining capacity problems at plants in Qatar and Algeria, which would normally help supply both Europe and Asia.

In early 2010, the NAS released a follow-up report on the BLM's management of the Reserve. The report, entitled "Selling the Nation's Helium Reserve," focused on "whether the interests of the United States have been well served by the [HPA] and, in particular, whether selling off the Reserve has had any adverse effect on U.S. scientific, technical, biomedical, and national security users of helium."

The 2010 NAS report, which identified some shortcomings of the 2000 report, takes a markedly different tone than the 2000 report. This change in approach reflects the volatility of the helium market over the last decade. The NAS report analyzes the relationship between supply and demand for helium on a domestic and international basis, as well as the BLM's management of the Reserve under the HPA. The report concludes that the HPA mandated sell-off is negatively impacting the needs of both current and future users of helium in the United States. This conclusion is the driving force behind a series of recommendations in the report directed at the BLM and the United States Congress.

H.R. 527, Responsible Helium Administration and Stewardship Act

H.R. 527 addresses many of the concerns that the 2010 NAS report identified regarding the Federal government's involvement in the helium market. Most importantly, the bill would create a set of phased authorities for the BLM's management

of the Reserve, establishing a "glide path" from the sales mandated under the HPA to a scenario where 3 billion scf of helium would be reserved solely for Federal users. This would accomplish the original goals of the HPA—the exit of the Federal government from the broader helium market and the paying off of the helium debt—while protecting long-term supply interests for the Federal government. The Department generally supports this approach to gradually scale back the Federal helium program.

The bill stipulates three phases to the drawdown: "Phase A: Finalizing Debt Payoff;" "Phase B: Maximizing Total Recovery of Helium and Increasing Returns to the American Taxpayer;" and "Phase C: Access for Federal Users." Phase A would begin on the bill's date of enactment and end 1 year after the date of enactment. During Phase A, the BLM would be required to offer for sale at least as much helium as was offered for sale during FY 2012. Phase B would begin immediately after Phase A and end when the volume of recoverable crude helium in the Reserve reaches 3 billion scf. During Phase B, the BLM would balance factors involving the amount of production capable from the Reserve, program management, market supply and demand, and demand of Federal users when determining the annual quantity of crude helium to offer for sale. Phase C would begin when the volume of recoverable crude helium in the Reserve reaches 3 billion scf and presumably last until all recoverable helium has been exhausted from the Reserve. During Phase C, the BLM would be authorized to sell crude helium only for use by Federal agencies and Federal grant holders. The Department would also like to work with the committee on technical modifications to this section of the bill.

Other significant aspects of H.R. 527 involve requirements that sales of crude helium be conducted at auction and that the BLM disclose certain information related to the helium market and supply chain. The Department and the BLM are committed to ensuring that the public receives a fair return on publicly owned energy and related resources. The Department and the BLM are also firmly committed to making information about how government operates more accessible, and consider transparency and open government a high priority. The Department looks forward to discussing these issues further with the sponsors and the Committee, and the Administration continues to evaluate any cost implications of this legislation.

Finally, the bill also would require the Secretary of the Interior to complete several reports and studies on helium. These include global and national helium gas resource assessments, and, in coordination with the Secretary of Energy, national forecasts and global trends of helium demand and an inventory of helium uses in the United States. In addition, the bill would direct the Secretary of the Interior and the Secretary of Energy to cooperate on any assessments and research relating to the extraction and refining of the isotope helium-3, and direct the Secretary of the Interior to assess the feasibility of establishing a facility to separate the isotope helium-3.

Conclusion

Thank you for the opportunity to present testimony on the Federal helium program and H.R. 527. The BLM welcomes further discussion about the Federal helium program and the BLM's role in meeting future helium needs for the country, especially for Federal agencies that depend on helium for scientific research, aerospace projects, and defense purposes. Since its formal discovery almost 120 years ago, helium has proven to be an increasingly important natural resource. The expansion of helium-related technology and declining domestic reserves means the importance of helium as a strategic resource is likely to increase. The BLM continues to serve the country by effectively managing the Reserve, and working with natural gas producers to efficiently extract helium from natural gas. I would be happy to answer any questions the Committee may have.

Response to questions submitted for the record by Timothy R. Spisak, Deputy Assistant Director, Minerals and Realty Management, Bureau of Land Management, U.S. Department of the Interior

Questions from Rep. Markey

When was the last time that the refining capacity of the refiners connected to the BLM Federal Helium Reserve was collected? When was the last time that information was made public?

The BLM last conducted a survey of the plant refining capacities of the companies (i.e., the refiners) that are connected to the BLM Federal Helium Reserve in June 2008. The total refining capacity of all the refiners on the helium conservation pipeline was published at that time.

Have there been significant changes in that refining capacity since that time?

There have been no significant changes in plant capacities since the 2008 survey.

Is the BLM aware of all of the changes made to the refining capacity of refineries connected to the BLM helium reserve? If so, please detail the current refining capacity, by refinery, of each of the four refiners connected to the pipeline. If not, please detail why not.

Yes, the BLM is aware of changes to the plant refining capacities of each refiner. However, the refining capacities for individual plants are not made available to the public because the information is proprietary. The total capacity for all the plants owned by the four refiners along the helium conservation pipeline is approximately 4.05 bcf. Although the refining capacities of individual plants are not available to the public, the ratio of total capacity per company (some of whom own multiple plants) is public knowledge because the BLM sells open market helium based on those percentages. The percentages of total capacity per company are as follows: Air Products, 36 percent; Praxair, 34 percent; Linde, 26 percent; and Keyes, 4 percent.

Some have argued that moving to a competitive auction system would create supply uncertainty in helium markets. But as you note in your testimony, haven't helium supplies and markets been "uncertain" over the last 15 years?

In recent years, there has been some uncertainty in helium markets. This has been caused primarily by increasing demand from international markets coupled with a global helium supply shortage. For example, countries such as Qatar and Algeria, which normally meet the demand for Europe and Asia, are currently experiencing refining capacity problems.

Questions from Rep. Hanabusa

What is the cost of separating crude helium from natural gas deposits?

The BLM does not have cost information regarding the separation of crude helium from natural gas. The cost of separating crude helium from natural gas varies depending on the technology used to produce the gas, the concentration of the helium contained within the natural gas, and the deposit size. In general, the cost increases as (i) the concentration of the helium decreases, (ii) geologic conditions, such as extremely low or high gas-field pressure, present a challenge to ensuring the resource is extracted in a diligent and prudent manner, and (iii) unwanted constituents, such as H_2S and CO_2, are entrained within and must be removed from the gas before it may be sold to market.

Have advances in the natural gas extraction process and/or the crude helium separation process led to increased volumes of helium being collected?

Advances in the natural gas extraction process, such as hydraulic fracturing, have not led to increases in helium extraction because those deposits have extremely low helium concentrations, generally 0.05 percent or less. However, if natural gas liquids containing helium were to be produced from natural gas fields in large enough quantities, it is possible that helium extraction plants might be constructed as part of the natural gas extraction and refining process. This is the type of helium extraction currently used in Algeria and Qatar.

Advances in membrane technology, which is a technology that uses pressure to separate helium from the mixture of gases originally produced from a natural gas well, have yielded small increases in helium extraction.

In collecting natural gas through the fracking process, do the compounds in the fracking fluid create any kind of chemical reaction that can alter the helium deposits or affect the helium separation process?

Because helium is an inert gas, it does not react with any known chemical or compound.

Questions from Rep. Lowenthal

Since passage of the 1996 Helium Privatization Act directed the Interior Department to sell crude helium from the Federal Helium Reserve using a statutory pricing scheme, what is your best estimate of the aggregate to-date revenue lost due to sales of helium at prices below what a free market sale would have commanded? For this estimate, please distinguish between revenue lost based on sales to the private sector and sales to Federal Agencies (thru in-kind sales).

The unique characteristics of the helium market, including major fluctuations in domestic and international demand and global supply shortages, make it very difficult to determine the true market price for crude helium in the years since 1996. In addition, because the Federal Helium Reserve supplies approximately 42 percent of domestic demand and approximately 35 percent of global demand for crude helium, the price of Federal helium has effectively become the benchmark market price.

From the time of the BLM's first sale in 2003 until 2008, more crude helium was offered for sale than was sold. This would indicate that in those years, the price to purchase crude helium from the Federal Helium Reserve (then the statutory minimum) exceeded the price to purchase crude helium from private sources. In 2009 and 2010, the BLM sold all of the crude helium offered for sale, but there were no indications of market shortages or scarcity. This would indicate that in those years, the price to purchase crude helium from the Federal Helium Reserve (also the statutory minimum) approximated the price to purchase crude helium from private sources.

Since 2011, the BLM has continued to sell all of the crude helium offered for sale, but has significantly increased the price it charges non-Federal purchasers. During FY 2013, the open-market price is $84.00/mcf, up from $64.75/mcf in 2010. The BLM is currently working with the Department's Office of Mineral Evaluation, as recommended by the Office of the Inspector General, to develop a new pricing formula to ascertain the open market value of crude helium. The BLM expects to implement the new formula in FY 2014.

What is your best estimate of the aggregate value of the remaining helium in the Federal Helium Reserve? Please base your estimate on projected market prices assuming sales from the Reserve are sold at auctions as envisioned by H.R. 527 (until 3 billion cubic feet remain). Please also distinguish between the value of helium sold to the private sector and the value of helium sold to Federal Agencies as projected based on a constant 161 million cubic feet annual Federal Agency consumption rate of reserve helium at the prevailing auction price.

Between 2014 and 2019, after which no further open market sales are anticipated under current draw-down projections, the BLM estimates total cumulative helium sales would generate gross receipts of around $630 million. Of this amount, the BLM estimates that Federal in-kind sales would generate gross receipts of around $80 million at a sales rate of 200 million cubic feet. At a constant sales rate of 161 million cubic feet, Federal in-kind sales are estimated to generate around $65 million between 2014 and 2019.

THE CHAIRMAN. Thank you very much, Mr. Spisak. And obviously, if there are technical changes, we look forward to that. This is always the start of the process, so I appreciate your testimony.

Mr. SPISAK. Absolutely.

THE CHAIRMAN. Next we will recognize Mr. Garcia-Diaz for 5 minutes. And, Mr. Garcia-Diaz, you are recognized.

STATEMENT OF DANIEL GARCIA-DIAZ, DIRECTOR, NATIONAL RESOURCES AND ENVIRONMENT, U.S. GOVERNMENT ACCOUNTABILITY OFFICE

Mr. GARCIA-DIAZ. Thank you. Chairman Hastings, Ranking Member Markey, and members of the Committee, I am pleased to be here today to discuss the Bureau of Land Management's Federal helium program.

As you know, the Federal Government has been extensively involved in the production, storage, and use of helium since the early part of the 20th century. With the Helium Privatization Act of 1996, the goals of the helium program were significantly changed, including having the Federal Government reduce the size of the reserve, pay down the program's debt, and exit the refined helium production business. The current program managed by BLM fo-

cuses on storing and selling helium to government agencies and private entities.

My remarks today summarize and update information from our May 2010 testimony. I will discuss how the 1996 Act addressed issues we raised in the 1990s, and 3 urgent issues facing the helium program in the near future.

The 1996 Act caused considerable changes to the helium program and addressed or altered GAO's prior concerns in 3 specific areas: the program's debt; Federal pricing of helium; and alternatives to meeting the Federal need for helium.

By the early 1990s, the program's debt to the Treasury, which paid for the purchase of helium for storage, reached about $1.3 billion, most of which was accrued interest. The 1996 Act froze the debt at $1.4 billion with interest no longer accruing, and required repayment of the debt. The 1996 Act also changed the method for determining the minimum price of crude helium. The Secretary was required to set sale prices to cover the reserves, operating costs, and to produce an amount sufficient to pay back the debt, plus an inflation factor.

Finally, the 1996 Act reset the program's objective, directing Interior to stop refining helium and establish an in-kind sales program for Federal agencies. Since 1998, Federal agencies can purchase helium from authorized helium supply companies. And, in return, BLM sells an equivalent amount of crude helium to these companies at the minimum price.

Since the 1996 Act, we have identified three urgent issues regarding the program's direction. The first issue is how the helium program will be funded after 2013, when the debt is paid off. The Act requires that all program revenues be returned to the Treasury upon repayment of the program's debt. The program relies on revenues generated by the helium sales to pay for its day-to-day operations. As a result, the program does not receive any new appropriated funds.

When the debt is paid off this year, as expected, it is not clear how the operations of the helium program will be paid for. BLM is still evaluating possible options, but it may have to undertake an orderly shut-down of the reserves, unless the use of program revenues is extended, or there is discretionary funding appropriated.

The second issue is at what price should BLM sell its crude helium. When BLM first set its price after the 1996 Act, it was estimated to be significantly higher than market levels. But now the reverse is true. BLM's price for crude helium is estimated to be below market levels. BLM implemented a new pricing system in 2011 in which sales to non-governmental entities are charged a higher price, based on debt repayment and other factors. While the new system results in higher prices, it is not a market-based system. Given current market prices, the potential for higher returns on Federal helium exist.

Finally, the third issue is: How should the helium remaining in storage be used after 2015? The 1996 Act required BLM to offer for sale substantially all the helium in storage by January 2015. While the required amounts have been offered for sale, only 79 percent has actually been sold in recent years. BLM will have significantly

more helium in storage than the target established in the 1996 Act. And it is uncertain at this point how the helium still remaining in storage after 2015 will be used.

In conclusion, Mr. Chairman, there have been a number of changes in the market for helium since the Congress passed the Act. And now time is running out. Action will be needed to ensure that funding authority for operating the reserve is available beyond the current fiscal year. Otherwise, the risk of a major disruption in the supply of helium looms in an already-stressed market.

Further, addressing the pricing of Federal helium will generate a fair return on government assets. And clarifying the program's future objectives will provide direction to BLM as it continues to serve the Nation's helium need.

Mr. Chairman, this completes my prepared statement. I would be happy to respond to any questions you may have at this time.

[The prepared statement of Mr. Garcia-Diaz follows:]

Statement of Daniel Garcia-Diaz, Director, National Resources and Environment, U.S. Government Accountability Office

Chairman Hastings, Ranking Member Markey, and Members of the Committee:

I am pleased to be here today to discuss the federal helium program currently managed by the Department of the Interior's (Interior) Bureau of Land Management (BLM). As you know, helium is an important nonrenewable natural resource that has a variety of uses. The federal government uses helium for, among other things, the space program, national security applications, and scientific research. For many of its uses, helium has no substitute.

During the 1960s and early 1970s, to fulfill the conservation objective of the Helium Act Amendments of 1960,[1] Interior purchased about 34 billion cubic feet of helium from private crude helium producers.[2] In the 1990s, we reported to, and testified before the Subcommittee on Energy and Mineral Resources on Interior's management of the federal helium program.[3] In May 1993, we testified that Interior had enough helium in storage to meet federal needs until at least 2070 and that a reassessment of the objectives of the Helium Act was needed.

Since our reports in the early 1990s, key changes have affected the federal helium program, and a 2010 report by the National Academies' National Research Council concluded that it is time once again to reassess the program.[4] We revisited our work from the 1990s, and we raised some issues facing BLM's helium program in our May 13, 2010, testimony before this Committee's Subcommittee on Energy and Mineral Resources.[5] My testimony today will describe (1) how the Helium Privatization Act of 1996 addressed issues we raised in the 1990s and (2) three urgent issues facing the helium program in the near future. This testimony summarizes and updates the information presented in our May 2010 testimony. Our May 2010 testimony was a performance audit conducted in accordance with generally accepted government auditing standards. A detailed description of our scope and methodology is presented in our May 2010 testimony.[6]

Background

Helium is an inert element that occurs naturally in gaseous form and has a variety of uses (see table 1).[7] Helium's many uses arise from its unique physical and chemical characteristics. For example, helium has the lowest melting and boiling point of any element and, as the second lightest element, gaseous helium is much lighter than air.

Table 1: Estimated Helium Uses in the United States, 2010

Category of use	Examples of applications	Amount used (million cubic feet)	Percentage
Cryogenics	Magnetic resonance imagining (MRI) Fundamental science Industrial cryogenic processing	480	26
Controlled atmospheres	Optical fiber manufacturing Semiconductor manufacturing	407	22
Pressure/purge	Space and defense rocket purging and pressurizing	314	17
Welding	Metal welding	314	17
Chromatography/ lifting gas/ heat transfer	Chromatography Weather balloons Military reconnaissance Heat transfer in next-generation nuclear reactors Party balloons	220	12
Leak detection	Leak detection	76	4
Breathing mixtures	Commercial diving	36	2
Total		**1,846**	**100**

Sources: U.S. Geological Survey's 2010 Minerals Yearbook and the National Research Council.

Note: Totals may not add because of rounding.

Certain natural gas fields contain a relatively large amount of naturally occurring helium, which can be recovered as a secondary product. The helium is separated from the natural gas and stored in a concentrated form that is referred to as crude helium because it has yet to go through the final refining process.[8] The federal government has a reserve of crude helium that is stored in the ground in an area of a natural gas field that has a naturally occurring underground structural dome near Amarillo, Texas. In addition to the federal government's reserve of crude helium, private companies that are connected to BLM's pipeline and pay a storage fee, are also able to store and retrieve their own private crude helium reserves from the same storage area.

The federal government has been extensively involved in the production, storage, and use of helium since the early part of the twentieth century. The federal government and private sector cooperatively produced helium before 1925 specifically for military uses. The Helium Act of 1925,[9] as amended, assigned responsibility for producing helium for federal users to Interior's Bureau of Mines.[10] From 1937 until 1960, the Bureau of Mines was the sole producer of helium. The act provided that funds from helium sales be used to finance the program by establishing a revolving fund known as the helium production fund. Such revolving funds are used to finance a cycle of business-type operations by charging for the sale of products and then using the proceeds to finance their spending. In the federal budget, this fund is referred to as the Helium Fund, and it is used to account for the program's revenues and expenses.

The Helium Act Amendments of 1960 stipulated that the price of federal helium cover all of the helium program's costs, including interest on the program's debt. The 1960 act required the Secretary of the Interior to determine a value for net capital and retained earnings, establish this value as debt in the Helium Fund, and add subsequent program borrowings to that debt. The program's borrowings were authorized by subsequent appropriations acts and recorded as outlays in the federal budget in the years in which they were expended. In addition, the interest was added to the debt in the Helium Fund. However, this interest is simply a paper transaction, not a government outlay. The Bureau of Mines determined that the value of the program's net capital and retained earnings was about $40 million in 1960. Subsequent borrowings from the U.S. Treasury totaling about $252 million were used to purchase helium for storage. By September 30, 1991, the debt had grown to about $1.3 billion, of which more than $1 billion consisted of interest because the interest accrued faster than the program could repay the debt.

The Helium Privatization Act of 1996 significantly changed the objectives and functions of Interior's helium program.[11] For example, the 1996 act made the following key changes:

- Interior was required to close all government-owned refined helium production facilities and to terminate the marketing of refined helium within 18 months of enactment (50 U.S.C. § 167b(b),(c));
- the helium program's debt was frozen as of October 1, 1995 (50 U.S.C. § 167d(c));
- Interior was required to offer for sale all but 600 million cubic feet of the crude helium in storage on a straight-line basis—a depreciation method that spreads out the cost of an asset equally over its lifetime—by January 1, 2015 (50 U.S.C. § 167f(a)(1));
- Interior was required to set sale prices to cover the crude helium reserve's operating costs and to produce an amount sufficient to repay the program's debt. The price at which Interior sells crude helium was required to be equal to or greater than a formula that incorporates the amount of debt to be repaid divided by the volume of crude helium remaining in storage, with a consumer price index adjustment (50 U.S.C. §§ 167d(c), 167f(a)(3)). Furthermore, when the debt is fully paid off, the revolving Helium Fund shall be terminated (50 U.S.C. § 167d(e)(2)(B));
- Interior was allowed to maintain its role in the helium storage business (50 U.S.C. § 167b(a)); and
- established a modified "in-kind" program to meet federal needs for helium. Rather than purchasing refined helium directly from Interior, federal agencies were required to purchase their major helium requirements from persons who have entered into enforceable contracts to purchase an equivalent amount of crude helium from Interior (50 U.S.C. § 167d(a)).[12]

As directed by Congress, the National Academies' National Research Council reviewed the helium program and released a report in 2000 that evaluated the changes made in the program, the effects of these changes on the program, and several scenarios for managing the federal government's reserve of helium in the future.[13] Because of subsequent changes in price and availability of helium, in 2008, the National Research Council convened a committee to determine if the current implementation of the helium program was having an adverse effect on U.S. scientific, technical, biomedical, and national security users of helium. The committee reported on these effects in early 2010 and concluded that the current implementation of the program has adversely affected critical users of helium and was not in the best interest of the U.S. taxpayers or the country.

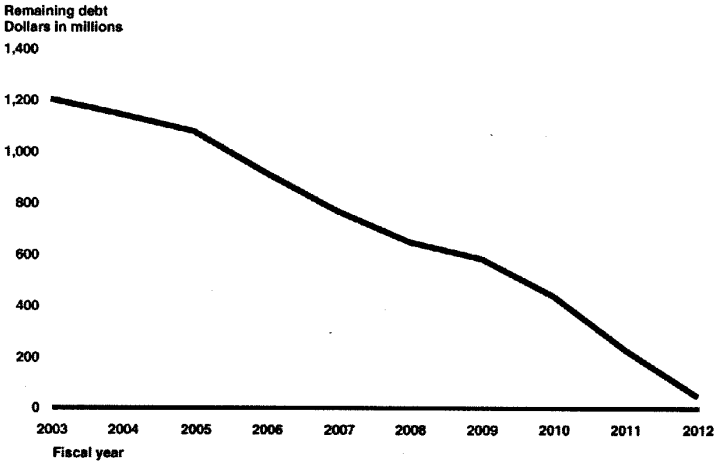
The Helium Privatization Act of 1996 Addressed or Altered Our Prior Concerns

Since our reports in the early 1990s, the Helium Privatization Act of 1996 has caused considerable changes to the helium program and addressed or altered our prior concerns. In October 1992, we reported on various aspects of the federal helium program including the helium debt, pricing, and alternatives for meeting federal helium needs.[14]

Helium Debt

In October 1992, we recommended that Congress cancel the helium program's debt. As of September 1991, the debt had grown to about $1.3 billion, over $1 billion of which was interest that had accrued on the original debt principal of about $290 million. At that time, the deadline for paying off the debt was 1995. We reported that the only way to pay off the debt by that deadline would be to charge federal agencies with major requirements for helium over $3,000 per thousand cubic feet of helium, compared to the price at that time of $55. We recommended that Congress cancel the debt in the Helium Fund because it was no longer realistic to expect the debt to be repaid by the statutory deadline of 1995, and because canceling the debt would not adversely affect the federal budget as the debt consisted of outlays that had already been appropriated and interest that was a paper transaction. The 1996 act did not cancel the debt, as we had recommended, but because the 1996 act effectively froze the debt at $1.37 billion, and interest no longer accrued, BLM has been able to pay off a large portion of its debt. As of the end of fiscal year 2012, BLM had $44 million in debt remaining, which according to BLM officials it expects to pay off this year (see fig. 1).

Figure 1: Balance of the Helium Debt, Fiscal Years 2003 through 2012

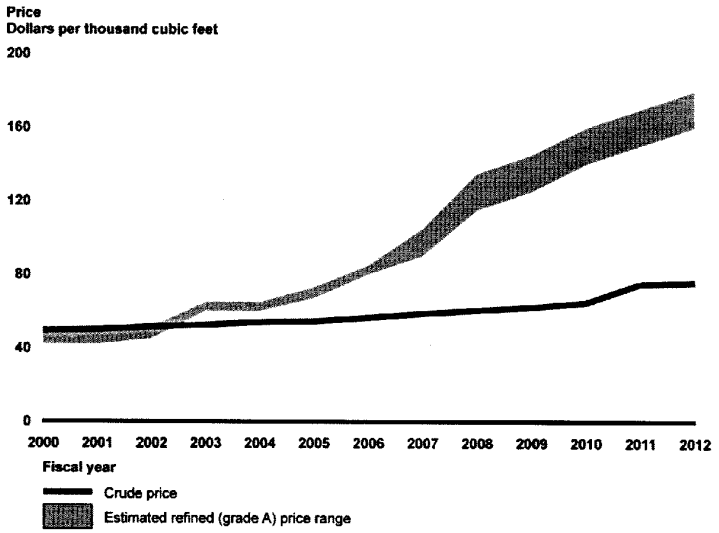


Source: BLM.

Helium Pricing

The helium debt was also a factor in setting the price of federal helium. In 1992, GAO recognized that if the helium debt was cancelled, Congress may wish to propose a new pricing scheme. The 1996 act did not cancel the debt, as we had recommended, but it did require a specific method for pricing crude helium. The initial minimum BLM selling price for crude helium after the act was passed was almost double the price for private crude helium at that time. However, after BLM started to sell its crude helium, according to the method specified in the act, the market price for crude and refined helium began to change. According to the National Research Council, the private sector began using the BLM crude price as a benchmark for establishing its price and, as a result, privately sourced crude helium prices increased and now they meet or exceed BLM's price. Increases in the price of crude helium have also led to increases in the price of refined helium (see fig. 2). Refined helium prices have more than tripled from 2000 through 2012 pursuant to demand trends.

Figure 2: BLM Crude Helium Price and Refined (Grade A) Price Estimates, Fiscal Years 2000 through 2012



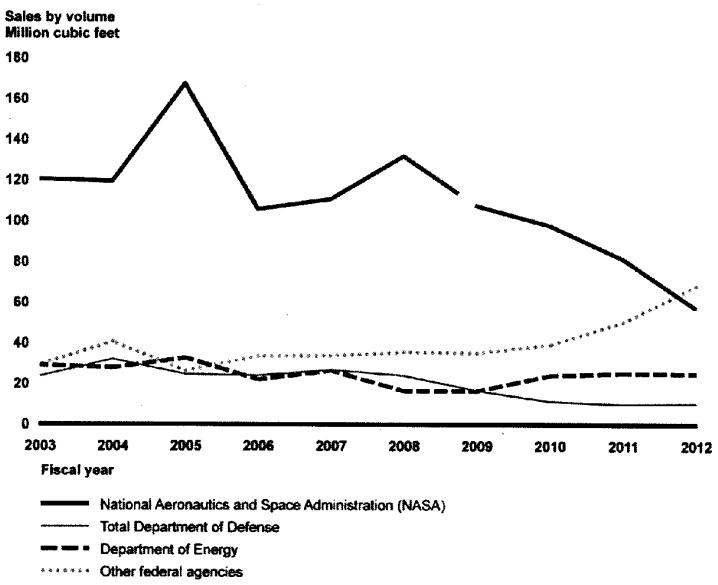
Source: BLM.

Note: For fiscal years 2000 through 2010, BLM had only one sale price for crude helium for both "in-kind" and "open market" sales. Beginning in fiscal year 2011, BLM instituted a new two-tier pricing system. The crude helium price used in the figure for fiscal years 2011 and 2012—$75.00 and $75.75 per thousand cubic feet, respectively—is the higher price for "open market" sales. The lower price for "in-kind" sales for fiscal years 2011 and 2012 was $64.75 and $65.50 per thousand cubic feet, respectively.

Alternatives for Meeting Federal Helium Needs

In 1992, GAO recommended that Congress reassess the conservation objectives of the helium program and consider other alternatives to meet federal helium needs. As part of the resetting of the helium program's objectives, the 1996 act established a revised approach for meeting federal needs for helium. In 1998, BLM began using in-kind sales to federal agencies. The in-kind regulations established procedures for BLM to sell crude helium to authorized helium supply companies and required federal agency buyers to purchase helium from these approved suppliers.[15] Since the in-kind program started, the sales to federal agencies have fluctuated, primarily due to the National Aeronautics and Space Administration's unique requirement for large volumes of helium on a sporadic basis. Total federal in-kind sales for fiscal year 2012 were 160.67 million cubic feet (see fig. 3).

Figure 3: In-Kind Helium Sales by Federal Agency, Fiscal Years 2003 through 2012



Source: BLM.

Three Urgent Issues Facing the Helium Program

As we testified in 2010, changes in helium prices, production, and demand have generated concerns about the future availability of helium for the federal government and other critical purposes. The Helium Privatization Act of 1996 does not provide a specific direction for the helium program past 2015. As a result of these factors, in 2010, we identified three areas of uncertainty about the program's direction after 2015. The same three areas are even more urgent today because 3 years have passed since our 2010 testimony, and BLM's schedule for paying off the program's debt has accelerated. Specifically, the three urgent issues are as follows:

- How will the helium program be funded after 2013? If the helium program's debt is paid off this year, as expected, and the revolving helium fund is terminated, it is not clear how the operations of the helium program will be paid for. Currently the helium program does not receive any appropriated funds for its operations. The revenues generated by the program go into the Helium Fund, and the program has access to those funds to pay for its day-to-day operations. It is uncertain at this point how the helium program's operations will be funded after 2013. BLM is still evaluating possible options, but it may have to undertake an orderly shutdown of the helium reserve unless the revolving fund is not terminated or appropriated funds are available for crude helium sales and the operations of the reserve. When we last testified on this issue, the estimated payoff date was 5 years away in 2015, and it was more closely aligned with the 1996 act's requirement to sell down the helium reserve by January 1, 2015. The debt payoff schedule has accelerated primarily because of improved sales of the crude helium offered for sale. As a result, BLM's helium program will not have a funding mechanism for its continued operation until 2015. Furthermore, because of some years of slow sales, BLM estimates that it will need to continue helium sales from the reserve until sometime between 2018 and 2020 to reach the 1996 act's requirement to draw down to 600 million cubic feet.
- At what price should BLM sell its crude helium? Since the Helium Privatization Act of 1996 was passed, BLM has set the price for federal crude helium at the minimum price required by the act. However, because federal crude helium reserves provide a major supply of crude helium, we expect BLM's prices will continue to affect private industry market prices for crude and refined helium. When BLM first set its price after the 1996 act, its price was

estimated to be significantly higher than the market price, but now the reverse is true—BLM's price for crude helium is estimated to be at or below the market price for refined helium. The 1996 act, like the Helium Act Amendments of 1960 before it, tied the price to the program's operating expenses and debt. If the debt is paid off in 2013, as projected, the debt will no longer be a factor in setting helium prices. BLM officials told us that the 1996 act sets a minimum selling price and that the Secretary of the Interior has the discretion to set a higher price. In response to a recommendation in the National Research Council's 2010 report, beginning in fiscal year 2011, BLM implemented a new two-tiered pricing system. Under the new pricing system, in-kind sales involving federal agencies continued to be based on the minimum selling price set in the 1996 act, while other sales to nongovernmental entities are charged a higher price based on debt repayment and cost recovery factors.[16] The new pricing system, however, is still not a market-based pricing system. In November 2012, Interior's Office of Inspector General recommended that BLM implement a new helium pricing process by the end of 2013 to ensure a fair return on the sale of helium.[17]

- How should the helium remaining in storage after 2015 be used? The Helium Privatization Act of 1996 required BLM to offer for sale substantially all of the helium in storage by January 1, 2015. While the required amounts have been offered for sale, only 79 percent of the amounts offered for sale have actually been sold (see table 2). BLM will likely still have significantly more crude helium in storage than the 600 million cubic feet required by the 1996 act. As of September 30, 2012, there were 11.44 billion cubic feet of conservation helium in storage.[18] According to the 2010 report by the National Academies' National Research Council, the United States could become a net importer of helium within the next 7 to 12 years, and the principal new sources of helium will be in the Middle East and Russia. Given these circumstances, the National Academies' report recommended that Congress may want to reevaluate how the domestic crude helium reserve is used or conserved. It is uncertain at this point how the helium still remaining in storage after January 1, 2015, will be used.

Table 2: Actual and Projected Crude Helium Sales, Fiscal Years 2003 through 2013

Amounts in millions of cubic feet				
Fiscal year	**Amount offered for sale**	**Amount sold**	**Amount not sold**	**Percentage sold**
Actual sales through December 2012				
2003	1,640	1,640	0	100
2004	2,100	675	425	32
2005	2,100	1,390	710	66
2006	2,100	1,565	535	75
2007	2,100	2,030	70	97
2008	2,100	1,638	462	78
2009	2,100	925	1,175	44
2010	2,100	2,100	0	100
2011	2,100	2,100	0	100
2012	2,100	2,100	0	100
2013 (1st quarter of fiscal year)	525	525	0	100
Subtotal	**21,065**	**16,688**	**4,377**	**79**
Projected sales				
2013 (last three quarters of fiscal year)	1,575	1,575	0	100
Total	**22,640**	**18,263**	**4,377**	**81**

Source: BLM.

Note: At the end of fiscal year 2012, there were 11.44 billion cubic feet of conservation helium in the reserve. If BLM sells 2.1 billion cubic feet per year in fiscal years 2013 and 2014, and 0.525 billion cubic feet in the first quarter of fiscal year 2015, the amount remaining in storage on January 1, 2015, would be 6.72 billion cubic feet.

In conclusion, Mr. Chairman, there have been a number of changes in the market for helium since Congress passed the Helium Privatization Act of 1996. As the deadline for the required actions to be taken under this act approaches, Congress may need to address some unresolved issues such as how the helium program will operate once the Helium Fund expires at the end of this year, how to set the price for the helium owned by the federal government, and how to use the remaining helium in storage.

Chairman Hastings, Ranking Member Markey, and Members of the Committee, this concludes my prepared statement. I would be pleased to answer any questions that you may have at this time.

GAO Contact and Staff Acknowledgments

For further information about this testimony, please contact me at (202) 512–3841 or garciadiazd@gao.gov. Contact points for our Offices of Congressional Relations and Public Affairs may be found on the last page of this testimony. In addition, Jeff Malcolm (Assistant Director), Carol Bray, Leslie Pollock, and Jeanette Soares made key contributions to this testimony.

ENDNOTES

[1] Pub. L. No. 86–777, 74 Stat. 918 (1960), codified as amended at 50 U.S.C. §/§ 167–167m.

[2] "Crude helium" is a gas containing approximately 50 to 85 percent helium.

[3] GAO, Mineral Resources: Federal Helium Purity Should Be Maintained, GAO/RCED 92 44 (Washington, D.C.: Nov. 8, 1991); GAO, Mineral Resources: Meeting Federal Needs for Helium, GAO/RCED 93 1 (Washington, D.C.: Oct. 30, 1992); GAO, Mineral Resources: Meeting Federal Needs for Helium, GAO/T RCED 93 44 (Washington, D.C.: May 20, 1993); GAO, Mineral Resources: H.R. 3967 A Bill to Change How Federal Needs For Refined Helium Are Met, GAO/T RCED 94 183 (Washington, D.C.: Apr. 19, 1994); and GAO, Terminating Federal Helium Refining, GAO/RCED 95 252R (Washington, D.C.: Aug. 28, 1995).

[4] National Research Council, Selling the Nation's Helium Reserve (Washington, D.C.: National Academies Press, 2010).

[5] GAO, Helium Program: Key Developments Since the Early 1990s and Future Considerations, GAO 10 700T (Washington, D.C.: May 13, 2010). In addition, hearings were held in the U.S. Senate and the House of Representatives on helium in 2012. See, Helium Stewardship: Hearing to Receive Testimony on S. 2374, The Helium Stewardship Act of 2012 Before the Senate Comm. on Energy and Natural Resources, 112th Cong. (2012); and Helium: Supply Shortages Impacting our Economy, National Defense and Manufacturing Oversight Hearing Before the Subcomm. on Energy and Mineral Resources of the House Comm. on Natural Resources, 112th Cong. (2012).

[6] GAO 10 700T.

[7] Helium in this statement refers to helium-4, the most abundant naturally occurring helium isotope. Helium-3, which has its own supply and demand issues, is not the focus of this statement. For additional information on helium-3, see GAO, Technology Assessment: NeutronDetectors: Alternatives to Using Helium-3, GAO 11 753 (Washington, D.C.: Sept. 29, 2011), and GAO, Managing Critical Isotopes: Weaknesses in DOE's Management of Helium-3 Delayed the Federal Response to a Critical Supply Shortage, GAO 11 472 (Washington, D.C.: May 12,2011).

[8] Refined helium has a varying purity of 99.99 percent to 99.9999 percent helium.

[9] Pub. L. No. 68–544, 43 Stat. 1110 (1925) (originally codified at 50 U.S.C. §§ 161–166 and currently codified as amended at 50 U.S.C. §§ 167–167m).

[10] The Bureau of Mines was established in 1910 and abolished in 1996. The helium program was transferred to BLM.

[11] Pub. L. No. 104–273, 110 Stat. 3315 (1996), codified at 50 U.S.C. §§ 167–167m.

[12] The term "person" means any individual, corporation, partnership, firm, association, trust, estate, public or private institution, or state or political subdivision thereof. 50 U.S.C. § 167(2).

[13] National Research Council, The Impact of Selling the Federal Helium Reserve (Washington, D.C.: National Academy Press, 2000).

[14] GAO/RCED 93 1

[15] 43 CFR Part 3195.

[16] According to BLM officials, federal agencies must negotiate their own purchasing contacts directly with an authorized helium supply company. BLM does not track the price negotiated andpaid by federal agencies. The authorized helium supply companies are required to purchase the same amount of helium, by volume, as sold to federal agencies. The price that the companies pay to buy the crude helium from BLM for these transactions involving federal agency sales is the "in-kind" sales price.

[17] Department of the Interior, Office of Inspector General, Bureau of Land Management's Helium Program, C–IN–MOA–0010–2011 (Washington, D.C.: Nov. 9, 2012).

[18] According to BLM, the native natural gas in the reserve contains an additional 2.44 billion cubic feet of helium.

HIGHLIGHTS

February 14, 2013

HELIUM PROGRAM

Urgent Issues Facing BLM's Storage and Sale of Helium Reserves

Why GAO Did This Study

The federal government has been extensively involved in the production, storage, and use of helium since the early part of the twentieth century. The federal helium program is currently managed by the Department of the Interior's BLM. During the 1960s and early 1970s, Interior purchased about 34 billion cubic feet of crude helium for conservation purposes and to meet federal helium needs, such as for the space program and scientific research. Crude helium is a gas of 50 to 85 percent helium. While some of this helium was used to meet federal needs, most of it was retained in storage. The funds used to purchase this helium became a debt owed by the program. BLM now sells crude helium from the reserve, and the proceeds go into the revolving Helium Fund, which is used to finance the program and payoff the program's debt.

GAO reported on the management of the helium program in the 1990s (GAO/RCED–92–44 and GAO/RCED–93–1).

Since GAO's reviews of the program in the 1990s, key changes have affected the program, and a 2010 report by the National Academies' National Research Council

concluded that it is time to reassess the program. GAO testified on the helium program in May 2010 (GAO–10–700T). This testimony is an update of GAO's May 2010 testimony and discusses (1) how the Helium Privatization Act of 1996 addressed issues raised by GAO in the 1990s and (2) three urgent issues facing the helium program in the near future.

GAO is not making any recommendations in this testimony.

What GAO Found

Since GAO's reports in the early 1990s, the Helium Privatization Act of 1996 has caused considerable changes to the helium program and addressed or altered GAO's prior concerns. In 1992, GAO reported on various aspects of the federal helium program including the helium debt, pricing, and alternatives for meeting federal helium needs.

- *Helium debt*. In 1992, GAO recommended that Congress cancel the helium program's debt since doing so would not adversely affect the federal budget, as the debt consisted of outlays that had already been appropriated and interest that was a paper transaction. As of September 1991, this debt had grown to about $1.3 billion, over $1 billion of which was interest that had accrued on the original debt principal of about $290 million. The 1996 act did not cancel the debt as GAO had recommended, but it did freeze the growth of the program's debt and, as a result, the debt should be paid off this year.
- *Helium pricing*. The helium debt was also a factor in setting the price of federal helium. In 1992, GAO recognized that, if the helium debt was cancelled, Congress might need to propose a new pricing scheme. The 1996 act requires a specific method for pricing helium. This, along with other changes in the supply and demand for helium, has resulted in the Bureau of Land Management's (BLM) price to be at or below the market price.
- *Alternatives for meeting federal helium needs*. In 1992, GAO recommended that Congress reassess the conservation objectives of the helium program and consider other alternatives to meet federal helium needs. In resetting the program's objectives, the 1996 act directed Interior to stop refining helium and established a modified in-kind approach for meeting federal helium needs. Agencies must purchase helium from refiners that then purchase an equivalent amount of crude helium from BLM.

Changes in the helium market have generated concerns about the future availability of helium for federal and other needs. The Helium Privatization Act of 1996 did not provide a specific direction for the federal helium program past 2015. Three urgent issues facing the program are as follows:

- *How will the helium program be funded after 2013?* If the helium program's debt is paid off this year, as expected, the revolving Helium Fund will be terminated as required by the 1996 act. When GAO last testified on this issue, the estimated payoff date was 5 years away in 2015. The schedule has accelerated primarily because of improved crude helium sales.
- *At what price should BLM sell its helium?* In the past, the debt has been a factor in the price, and the price has been above the market price. After 2013, the debt will be paid off, and the current price is at or below market.
- *How should the helium owned by the federal government be used?* BLM's effort to sell off the excess helium in storage will not be completed by January 1, 2015, as required by the 1996 act. As of September 30, 2012, there were 11.44 billion cubic feet of conservation helium in storage. After BLM is finished drawing down the reserve, some believe that the United States could become a net importer of helium.

Response to questions submitted for the record by Daniel Garcia-Diaz, Director, Natural Resources and Environment, U.S. Government Accountability Office

Questions for the Record Submitted by Representative Hanabusa

1. **What is the cost of separating crude helium from natural gas deposits?**
2. **Have advances in the natural gas extraction process and/or the crude helium separation process led to increased volumes of helium being collected?**
3. **In collecting natural gas through the fracking process, do the compounds in the fracking fluid create any kind of chemical reaction that can alter the helium deposits of affect the helium separation process?**

GAO Response:

Unfortunately, GAO has not conducted any prior work related to the three questions posed by Representative Hanabusa. As a result, we are not in a position to provide responses to any of the questions above.

Questions for the Record Submitted by Representative Lowenthal

1. **Since passage of the 1996 Helium Privatization Act directed the Interior Department to sell crude helium from the Federal Helium Reserve using a statutory pricing scheme, what is your best estimate of the aggregate to-date revenue lost due to sales of helium at prices below what a free market sale would have commanded? For this estimate, please distinguish between revenue lost based on sales to the private sector and sales to Federal Agencies (thru in-kind sales).**
2. **What is your best estimate of the aggregate value of the remaining helium in the Federal Helium Reserve? Please base your estimate on projected market proves assuming sales from the Reserve are sold at auctions as envisioned by H.R. 527 (until 3 billion cubic feet remain). Please also distinguish between the value of helium sold to the private sector and the value of helium sold to Federal Agencies as projected based on a constant 161 million cubic feet annual Federal Agency consumption rate of Reserve helium at the prevailing auction price.**

GAO Response:

Unfortunately, GAO has not conducted any prior work related to the two questions posed by Representative Lowenthal. As a result, we are not in a position to provide responses to any of the questions above.

THE CHAIRMAN. Thank you, Mr. Garcia-Diaz. I appreciate your statement. And last, we will recognize Kimberly Elmore, Assistant Inspector General of Audits, Inspections, and Evaluations, at the U.S. Department of the Interior.

And you are recognized for 5 minutes.

STATEMENT OF KIMBERLY ELMORE, ASSISTANT INSPECTOR GENERAL FOR AUDITS, INSPECTIONS, AND EVALUATIONS, U.S. DEPARTMENT OF THE INTERIOR

Ms. ELMORE. Good morning, Mr. Chairman and members of the Committee. I am pleased to be here today to participate in this hearing to discuss our most recent audit report dealing with the Bureau of Land Management's helium program.

The Bureau of Land Management administers America's Federal helium program. It oversees the national helium reserve to ensure that a sustained supply of helium is available for government and private-sector needs.

We had two objectives when performing our audit: to determine whether the BLM is charging its non-governmental customers market value prices for helium sales; and to determine if BLM has the appropriate policies and procedures in place to ensure sales to non-governmental customers are free from potential fraud, waste, and mismanagement. Our audit team concluded that BLM was not charging market prices and there were no policies in place dealing specifically with sales to non-governmental customers.

BLM has a current inventory of helium valued at approximately $1 billion. The inventory is valued based on cost, rather than market value. The Helium Privatization Act of 1996 required helium sales to be priced at a minimum to cover operating costs and repay the debt incurred by the government when it purchased a large in-

ventory of helium in 1960. BLM estimates that this debt, which is approximately $44 million, will be paid off later this year.

Upon repayment of the debt, the helium fund will terminate, pursuant to the 1996 law. According to BLM, this will have the effect, absent reauthorization or other appropriation, of ending the Department's ability to pay for continuing program operations.

BLM officials informed us, and industry research and newspaper articles confirm, that helium is in short supply. Industry predictions suggest that helium prices will increase when BLM exits the market. Approximately 90 percent of BLM's helium sales are to non-governmental customers. These sales equate to about 40 percent of the Nation's helium market. Because BLM is such a large provider, they are essentially driving the market price, which is based on cost, rather than market value of this resource.

We found that BLM does not have the expertise needed to identify the market value prices for its helium reserve because of its long history selling primarily to Federal buyers, and because of the limited number of private companies that currently have access to the Federal Government's supply. Without changes to the program, there is no assurance that BLM's non-governmental helium sales will ever be made at market value.

High technology uses have led to a rapid rise in helium demand in recent years, making the determination of market value for the government supply even more critical. Our audit detailed that for each percentage point increase in value to the helium supply, and the current value is a billion, BLM would collect an estimated $10 million in additional helium revenues. If the value of helium inventory were raised by 25 percent, BLM would collect an additional $250 million.

To capitalize on this opportunity, BLM needs to identify and to charge market value for helium sales to non-governmental purchasers. We recommended in our report that BLM should work with the Department of the Interior's Office of Minerals Evaluation to develop a process to identify fair market value for the price of helium sold to non-governmental buyers.

During our audit we also found that BLM has been operating without formal procedures for non-governmental helium sales since it assumed responsibility for the helium program in 1996. Establishing formal procedures not only provides for the consistency of program operations, but also minimizes the risk of fraud, waste, and mismanagement. BLM continues to sell helium at prices set during the 1990s, with adjustments for only inflation and changes in the program's operating costs.

There is no assurance that BLM's process reflects the market value of helium, which has increased dramatically in the private sector, as changes in technology have led to new and increasing uses for the resource. We strongly believe BLM should take this opportunity to determine and obtain fair-market value for its helium inventory. In doing so, BLM would help to ensure that government receives an appropriate return for the sale of this significant natural resource.

Mr. Chairman, thank you for the opportunity to testify today. I am happy to answer any questions you or any members of the Committee may have.

[The prepared statement of Ms. Elmore follows:]

Statement of Kimberly Elmore, Assistant Inspector General for Audits, Inspections, and Evaluations, Office of Inspector General, U.S. Department of the Interior

Good Morning, Mr. Chairman, and members of the Committee. My name is Kimberly Elmore. I am the Assistant Inspector General for Audits, Inspections and Evaluations at the Department of the Interior's Office of Inspector General. I am pleased to be here today to participate in this hearing to discuss our most recent audit report dealing with the Bureau of Land Management's Helium Program.

The Bureau of Land Management (BLM) administers America's Federal Helium Program. It oversees the National Helium Reserve to ensure that a sustained supply of helium is available for Government and private sector needs. Helium is an odorless gas found with other gasses in pockets beneath the Earth's surface. It is also a nonrenewable natural resource that has a variety of uses. Helium is essential to the high-tech manufacturing of fiber optic cables and the manufacturing of computer chips. It is used in biological research, deep sea diving, high-speed welding, weapons development, and plays a prominent role in medical imaging.

We had two objectives when performing our audit: to determine whether the BLM is charging its non-governmental customers market value prices for its helium sales, and to determine if BLM has the appropriate policies and procedures in place to ensure sales to non-governmental customers are free from potential fraud, waste and mismanagement. Our audit team concluded that BLM was not charging market value prices and that there were no policies in place dealing specifically with sales to non-governmental customers.

BLM has a current inventory of helium valued at approximately $1 billion. The inventory is valued based on costs rather than market value. The Helium Privatization Act of 1996 required helium sales to be priced, at a minimum, to cover operating costs and repay the debt incurred by the Government when it purchased a large inventory of helium in 1960. BLM estimates that this debt, which is approximately $44 million, will be paid off in 2013. Upon repayment of the debt, the helium fund will terminate, pursuant to the 1996 law. According to BLM, this will have the effect (absent reauthorization of the fund or other appropriations action) of ending the Department's ability to pay for continuing program operations. We believe, under current market conditions, BLM's remaining helium inventory is worth considerably more than its current $1 billion valuation, and if the program continues, sales to non-governmental purchasers will continue.

BLM officials informed us, and industry, research and newspaper articles confirm, that helium is in short supply. Industry predictions suggest that helium prices will increase when BLM exits the market. A 2011 international industry article ("Tight Supply Reins In The Worldwide Helium Market," CryoGas International, October 2011) reported that non-governmental helium producers have been increasing the price of helium at rates nearly three times greater than BLM over the past decade, and the article predicts prices will continue rising at double–digit annual rates over the next several years.

Approximately 90 percent of BLM's helium sales are to non-governmental customers. These sales equate to about 40 percent of the Nation's helium market. Because BLM is such a large provider, they are essentially driving the market price, which is based on costs rather than market value of the resource. We found that BLM does not have the expertise needed to identify market value prices for its helium reserve because of its long history of selling helium primarily to Federal buyers and because of the limited number of private companies that currently have access to the Federal Government's helium supply. Without changes to the program, there is no assurance that BLM's non-governmental helium sales will ever be made at market value. High-technology uses have led to a rapid rise in helium demand in recent years, making the determination of market value for the Government's supply more critical. In 2010, a National Academy of Sciences study concluded that the enormous BLM sales volumes were controlling prices worldwide, giving no assurance that BML's helium price had any relationship to market value. Our audit found that for each percentage point increase in value to the helium supply, (the current inventory is valued at $ 1 billion), BLM would collect an estimated $10 million in additional helium revenues. If the value of the helium inventory were raised by 25 percent, BLM would collect an additional $250 million. To capitalize on this opportunity, BLM needs to identify and to charge market value for all helium sales to non-governmental purchasers.

We recommended in our report that BLM should work with the Department of the Interior's Office of Minerals Evaluation (OME) to develop a process to identify

the fair market value price of helium sold to non-governmental buyers. In their response to our report, BLM officials concurred with the recommendation and stated that they had begun to work with OME. The response detailed that they have developed several options for determining a new and fair pricing of sales to non-governmental buyers.

During our audit we also found that BLM has been operating without formal procedures for non-governmental helium sales since it assumed responsibility for the helium program in 1996. Establishing formal procedures not only provides for consistency in program operations, but also creates a baseline for internal controls. Without proper internal controls in place, the risk of fraud, waste and mismanagement is increased.

The Department of the Interior has a long history of selling helium primarily to Federal buyers; this is no longer the case, however. We recommended that BLM prepare and implement comprehensive procedures for managing its helium sales to non-governmental buyers. BLM officials agreed with our recommendation and have reported they are in the process of developing a comprehensive manual.

Our report provides highlights of the history of Government helium sales and provides recommendations that, if implemented, will help obtain fair market value from future sales. Legislation passed during the 1990's authorized that the Government's sale of the helium inventory be concluded by 2015, with the exception of a small reserve maintained for Federal purposes. Due to complications with determining fair market value for these reserves, BLM continues to sell its helium at prices set during the 1990's with adjustments only for inflation and changes in the programs operating costs. There is no assurance that BLM's process reflects the market value of helium, which has increased dramatically in the private sector as changes in technology have led to new and increasing uses for the resource. We strongly believe BLM should take the opportunity to determine and obtain market value for its helium inventory. In so doing, BLM would help to ensure that the Government receives an appropriate return for the sale of this significant natural resource.

Mr. Chairman, thank you for the opportunity to testify today. I am happy to answer any questions you or members of the Committee may have.

Response to questions submitted for the record by Kimberly Elmore, Assistant Inspector General for Audits, Inspections, and Evaluations, Office of Inspector General, U.S. Department of the Interior

Questions from Congresswoman Hanabusa

1. What is the cost of separating crude helium from natural gas deposits?

Helium is a by-product of natural gas production. As described by the Bureau of Land Management (BLM)—

> "When natural gas is processed, various impurities such as water vapor, carbon dioxide, and helium can be removed. This processing is required to make the natural gas meet various pipeline standards for transport and sale. If there is enough helium in the gas stream (usually about 0.3 percent or greater), special processing can be added to further extract and concentrate the helium and make it ready for sale."

This threshold of "0.3 percent" is a general guideline for the conditions under which producing (rather than flaring or venting) helium from a natural gas field might be considered economically viable. There are, however, many additional factors to be considered. Such factors include not only the geologic characteristics of the gas field and engineering characteristics of the production operation, but also: the cost and availability of transportation to refiners, distributors, and consumers; the local or regional demand for the commodity; and considerations of the quality (purity) of the helium. These factors are highly variable.

We did not gather specific data regarding the costs of separating crude helium from natural gas deposits, but note generally that higher market prices (driven by increasing demand) coupled with technological improvement should lead, over time, to increased production from natural gas deposits—whether from public or private lands. As stated by BLM—

> "[With] advances in natural gas extraction and liquification [sic] technology, helium extraction and processing is no longer a cost intensive process; in other words, it is not necessary that helium occur in concentrations of 0.3% or more to be economical for production. Helium could occur in very low concentrations and still be processed as an economical product for marketing and sales. Also, the high market price of natural gas and natural

gas byproducts, such as nitrogen and helium, is a good incentive for exploration of new gasfields [sic] and the production of helium among other gases. The high market prices are a driving force for increased exploration and re-evaluating reserve estimates."

2. Have advances in the natural gas extraction process and/or the crude helium separation process led to increased volumes of helium being collected?

The latest data available from the U.S. Geological Survey (USGS) and BLM indicate that overall helium production (including both "crude" and "pure" helium) has held to a range between 12,000 and 13,500 metric tons per year, from 2005 to 2011. As we indicated in our audit report, approximately 40% of U.S. supply comes from the BLM Helium program. BLM staff have indicated that ExxonMobil provides approximately 20% of domestic supply (from federal lands in Wyoming).

We do expect that the combination of increasing demand, improved technology, and market-based pricing will lead to increased production. We have not attempted to forecast, however, the rate of such growth. USGS reports that a number of new helium plants, in the U.S. and abroad, are planned through 2018. As one example of interest in expanding production within the U.S., Denbury Resources recently acquired the rights to produce federal helium from Riley Ridge, Wyoming, and estimate proved reserves of between 8.9 Bcf (federal) and 12.0 Bcf (including surrounding acreage) at a concentration of 0.6%. Helium producers operating on federal lands generally pay a royalty of ⅛ (12.5 percent).

3. In collecting natural gas through the fracking process, do the compounds in the fracking fluid create any kind of chemical reaction that can alter the helium deposits or affect the helium separation process?

This particular question is beyond our scientific/technical expertise, and not a question we have examined with BLM. We would expect BLM to consider implementing safeguards in their environmental analysis, permitting, and monitoring and enforcement processes if there is risk that industry practices such as hydraulic fracturing pose a conservation concern with respect to the quality of, or ability to produce, helium resources.

Questions from Congressman Alan Lowenthal

1. In your prepared testimony, you state that ". . . BLM's remaining helium inventory is worth considerably more than its current $1 billion dollar valuation . . ." What is your best estimate of the aggregate value of the remaining helium in the Federal Helium Reserve? Please base your estimate on projected market prices assuming sales from the Reserve are sold at auctions as envisioned by H.R. 527 (until 3 billion cubic feet remain). Please also distinguish between the value of helium sold to the private sector and the value of helium sold to Federal Agencies as projected based on a constant 161 million cubic feet annual Federal Agency consumption rate of Reserve helium at the prevailing auction price.

Responsibly estimating the value of the Federal Helium Reserve would require access to market data that neither we nor the Department have available. Further, even informal valuation is complicated by BLM's dominant market position. We are pleased that, as we recommended in our audit report, BLM is cooperating with the Department's Office of Minerals Evaluation (OME). Procurement processes are underway, we are told, for a "Crude Helium Pricing Methodology Project". The results of this effort are intended to inform the Department on approaches to valuing the Helium Reserve and, in turn, BLM's establishment of helium prices for 2014.

Given the limited access, in practical terms, to the Helium Reserve we are uncertain that conventional "sealed-bid" auctions are necessarily the best means to achieving market value. Four refiners on an existing pipeline network constitute, in essence, a "closed market" with considerable cost implications for any prospective new competitors. We suggest that some discretion be given for the Department to consider alternative means, and to protect the Department's ability to set appropriate minimum ("reserve") prices should auctions be deemed the most appropriate course.

2. Since passage of the 1996 Helium Privatization Act directed the Interior Department to sell crude helium from the Federal Helium Reserve using a statutory pricing scheme, what is your best estimate of the aggregate to-date revenue lost due to sales of helium at prices below what a free market sale would have commanded? For this estimate, please distin-

guish between revenue lost based on sales to the private sector and sales to Federal Agencies (thru in-kind sales).

As with the uncertainty of current market value referred to in the previous question, we have no past market data upon which to base an estimate of foregone revenues. In terms of distinguishing between conservation (nongovernmental) and in-kind (governmental) sales, we note that there was no difference in pricing between the two sales programs from October 1997 to September 2010. Only since October 2010 has BLM charged a higher price for its conservation crude program.

THE CHAIRMAN. Thank you very much, and I want to thank all of you for your testimony. I will recognize myself for 5 minutes for questioning. I just want to follow up on the pricing, because well, all of you kind of alluded to it, but especially the last two.

Director Garcia-Diaz, in your testimony, written testimony, you provided a chart that shows the estimated price of refined—I will emphasize that—"refined" helium. And it is significantly higher than what BLM sells crude. Now, I know there is a difference between crude and refined. There is obviously a processing cost. But the difference of roughly $160 per 1,000 cubic feet on the refined side and $85 that you are selling it is a huge difference, it seems to me.

I just want to know, I guess, why BLM has not been able to track the market prices. It's a very simple question. Is there a reason for that?

Mr. GARCIA-DIAZ. Yes, I am not sure why they haven't. Obviously, the price is going to be based on some of the statutory requirements of how they set the minimum price for sales to Federal agencies. And recently they have introduced a new two-tier pricing system for non-governmental entities, which is higher.

But at this point we haven't looked specifically at their methodology. And so I can't explain that difference, why their non-governmental price has not caught up with that higher grade-A refined helium price.

THE CHAIRMAN. You know, part of H.R. 527, obviously, is the auctions, bringing in market forces. Do you see that as one way to at least catch up to the pricing and be at market values, then?

Mr. GARCIA-DIAZ. Yes. Introducing more of a market-based approach for setting prices would make sense, and it would be a way to get away from a formula-driven calculation of what the crude price should be.

THE CHAIRMAN. OK. Director Spisak, any comments on the question I just asked Director Garcia-Diaz?

Mr. SPISAK. Sure. I appreciate the opportunity. I think when you are comparing, and I know you recognize there is a difference between refined and crude, but there is a lot of difference between refined and crude, and a lot of costs are associated with where it is delivered, and the services that are bundled around that. And generally, the costs associated with the refining part at a wholesale level are much closer. And so this, I believe, is maybe showing it in the worst light. But that is just my belief.

THE CHAIRMAN. Right. Well, there is no question about that, and it depends how it is sold, from destination, there are a lot of factors. But that is a big, big difference on that chart, as you can see. You can see roughly 10 years ago, the pricing was pretty much, you know, the same.

I just wanted to pursue that one part. That is the only questions that I have. So I will recognize—who is next on your side? Mr. Holt, you, as a sponsor—and thank you for cosponsoring this legislation—you are recognized for 5 minutes.

Dr. HOLT. Thank you, Mr. Chairman, and thank you for scheduling the hearing and inviting bipartisan participation in the bill.

Mr. Spisak, let me start with you. Over there. We are getting taller members of the Committee here, it seems.

[Laughter.]

Dr. HOLT. Apparently, a number of Federal helium users, national labs, Federally funded researchers, and so forth, are seeing that their deliveries have been delayed and even reduced in amount. In some cases they have been able to deal with this, I think, by better recycling and reuse of it. But I am trying to understand what is behind these smaller deliveries.

Do you think it makes sense to have a better carve-out for such users to ensure that the helium from the Federal reserve goes first to meet the needs of NASA and the Defense Department and the national labs and so forth?

Mr. SPISAK. When the 1996 Act was passed, we developed regulations that guided how agencies were to report their sales. And we negotiated what are called our in-kind sales contracts with those private companies that would supply refined helium to meet that in-kind Federal demand. Part of those contracts was to provide a priority to those Federal demands, and it doesn't get much more specific than that. A priority for the Federal uses was primarily targeted to major users of helium, like NASA, DoD, or DOE.

And at the time, as was mentioned in previous testimony, there was a higher price for crude helium, for a higher refined price, for those uses. So we were cognizant to the impact on the smaller users, by not requiring them to participate in the in-kind program.

Going forward, as time has gone on, they have picked up and started participating in that program. But the companies still have a means to adjust what they deliver, based on what helium they can acquire and refine and sell. And they have put their customers on allocations——

Dr. HOLT. But let me ask you to answer more specifically. What is the source of these smaller deliveries? Why is that happening now?

Mr. SPISAK. Well, their——

Dr. HOLT. You know, so——

Mr. SPISAK. Yes.

Dr. HOLT. Let's see, Argonne Lab is currently receiving only 70 percent of its allocation; Oak Ridge only 60 percent of its allocation, so forth.

Mr. SPISAK. As the life of the field goes on, physics is asserting itself, and the pressure in the field is going down, the field, with the equipment installed, is not able to maintain the same flow rates that it did earlier in its life. And we are starting to see that now, where we are not able to keep up with all the demands out there that may come into place.

You talked about going forward with this Act. I believe that we can, with the Act or some reauthorization passed, provide a strong-

er provision for Federal uses, given that this was developed for Federal——

Dr. HOLT. Didn't I hear you say that there should be a stronger provision for Federal uses?

Here is my question. We have a Federal resource here. This is a resource owned by the taxpayer. If there is restricted flow for reasons of physics or other reasons, should the Federal uses, Federally funded research, the national labs, NASA, Department of Defense, have a better-protected priority for whatever that flow rate is?

Mr. SPISAK. Well, clearly, the helium was purchased for Federal uses, one of the tenants of it, and it would be certainly within Congress's purview to make that a clear priority, that that could be what is guiding, overall.

Dr. HOLT. OK. Well, we have only a few seconds left. But, Ms. Elmore, you say the BLM is not able to determine, doesn't have the ability to determine market price. Could they get that ability? I mean is this something we just have to work around? Or, if we required it and they hired appropriate people, could that be done?

Ms. ELMORE. Yes, we believe that can be done. As part of the Department of the Interior, there is an Office of Valuation Services. And within that office there is Office of Minerals Evaluation. And they have economists and geologists on staff that are there to help develop market value. They were originally stood up to make sure that when they were appraising land, that minerals were captured and true appraisal was formulated. So we believe that they could be that third independent party that you discuss in the legislation to help come up with the market value.

Dr. HOLT. Thank you.

THE CHAIRMAN. The time of the gentleman has expired. The Chair recognizes the gentleman from Colorado, Mr. Lamborn.

Mr. LAMBORN. Thank you, Mr. Chairman. And I am going to ask this same question of the third panel. One question that has been coming up recently in this debate is: Who actually owns the helium in the reserve? There has been some question that the process of granting allotments and specified shares has led to the belief that people with allotments and specified shares have an ownership interest in the helium in the reserve.

Can you pin down that legal ownership issue of the helium in the reserve? That is important to know for our ongoing course of what we do here. Any one of you. We will start with you, Mr. Spisak.

Mr. SPISAK. Sure. Basically, the helium starts as Federal helium in place. As sales are made, we basically, on a piece of paper, a bookkeeping transfer of helium from the Federal account to the private account. And that happens each year with the sales. Over the last several years there is roughly a little over $1 billion cubic feet of private helium in the reserve. And that changes every day, as helium is redelivered. But the majority of it is Federal helium. But as it comes out of the ground it is redelivered as private helium.

Mr. LAMBORN. Do either of you two want to add to that?

Mr. GARCIA-DIAZ. No. My understanding would be similar to that.

Mr. LAMBORN. OK.

Ms. ELMORE. I agree. I don't have any comment to add.

Mr. LAMBORN. OK. So at the time of sale, and after it leaves the ground, is that what you are saying, Mr. Spisak? Then it becomes the property of the buyer?

Mr. SPISAK. When the sale is made and the payment is completed, we will transfer it from the government account to the private account. But as it is produced and goes up the pipeline, it is being redelivered as privately owned helium.

Mr. LAMBORN. OK. All right, thank you. It is still a complicated system.

Inspector General Elmore, your testimony states that the BLM has been operating without formal procedures for non-governmental helium sales, and that there are not the proper controls in place to provide for operational consistency, and to reduce the risk of fraud and waste. What can be done to ensure that does not continue? And does BLM have the tools needed to deal with the helium companies, and in an impartial manner, so as to get the best deal for the taxpayers?

Ms. ELMORE. I believe that good procedures are good business. And in response to our report, BLM has responded that they have already begun improving their procedures and documenting their policies and their operating procedures.

What we pointed out to them is that if you don't have good procedures documented, you can't do your risk assessment well. You have got to make sure this money is tracked, and you want to make sure that it is not misused. You want to know that it is accounted for. And you want to make sure that you have good separation of duties. So, by documenting all their procedures and, yes, they can do that, I think it will really strengthen their program for the sales of 90 percent of their helium.

Mr. LAMBORN. So you are recommending better documentation.

Ms. ELMORE. Yes.

Mr. LAMBORN. Complete, thorough, and accurate documentation.

Ms. ELMORE. Yes, I am.

Mr. LAMBORN. And will that get us to the point that we need to under the current system, apart from legislation, but a current system or in the future, as well, to be where we need to be for the ultimate protection of the taxpayers?

Ms. ELMORE. Yes, I do. I think, under either system, their policies and procedures should be documented.

Mr. LAMBORN. OK. All right, thank you, Mr. Chairman. I yield back.

THE CHAIRMAN. I thank the gentleman, and I recognize the distinguished Ranking Member, Mr. Markey.

Mr. MARKEY. Thank you, Mr. Chairman. Mr. Spisak, one of the central recommendations from the National Academy of Sciences in 2010 was "the BLM should adopt policies that open its crude helium sales to a broader array of buyers and make the process of establishing the selling price of crude helium from the Federal helium reserve more transparent."

Do you think that the auction system created in the legislation the Chairman and I are introducing is consistent with the goals outlined by the National Academy of Sciences?

Mr. SPISAK. Thank you. The auction system, as outlined, certainly would be a way to make more transparent the sale of the reserve going forward.

Mr. MARKEY. Ms. Elmore, do you agree?

Ms. ELMORE. Yes, I agree. I think the auction process will bring a higher rate, and it will open up more bidders, and open up the market to more people. So I think it is a great idea.

Mr. MARKEY. And Mr. Garcia-Diaz, would the legislation that we have introduced address the three urgent issues identified by the GAO: one, how the helium program will be funded after 2013; two, the price at which BLM sells its helium; and three, how the helium owned by the Federal Government should be used?

Mr. GARCIA-DIAZ. Yes, we feel that the legislation will address those three urgent issues.

Mr. MARKEY. Mr. Spisak, some have argued that the bipartisan legislation would not help bring any new helium to market. But the National Academy of Sciences concluded in 2010 that BLM's current system for pricing crude helium may slow efforts to aggressively pursue alternative crude helium sources, and negatively impact the evolution of the helium market.

Do you agree with the NAS conclusion that if we create a more transparent and open market for helium that better reflects a true price, it would provide additional economic incentives for private investment to bring new supplies of helium online, or to develop an efficiency and conservation measures? Do you agree with that?

Mr. SPISAK. Generally. The difficulty with the helium market is that it is a fairly small number of players. And the pricing is generally fairly closed, and it is difficult to get some of that information. The BLM's price being the only published price on the market has driven a lot of those price adjustments.

I think the objectives in the Act that you have would help open that up, and allow more market-based pricing to come through.

Mr. MARKEY. Mr. Garcia-Diaz, do you agree with what Mr. Spisak just said?

Mr. GARCIA-DIAZ. Yes, I do. To the extent that you have more transparency about price, over the long run you will have something that is approaching more market than what we have now.

Mr. MARKEY. Are we venting or flaring helium anywhere in the United States, or in the rest of the world? Mr. Spisak?

Mr. SPISAK. I don't have specifics, but I am certain that there are projects out there where the economics are either marginal to where helium is being lost with the natural gas, or that the various processes haven't been put in place yet to recover helium that is more economic. So yes, that is happening.

Mr. MARKEY. So you are saying that if helium prices were higher, based upon a more open and transparent market, wouldn't that increase the economic incentive to potentially capture the helium that is not being captured right now?

Mr. SPISAK. Raising the price of helium will make projects more profitable, yes.

Mr. MARKEY. Do you agree with that?

Mr. SPISAK. Yes.

Mr. MARKEY. Do you agree with that, Ms. Elmore?

Ms. ELMORE. Yes, I do.

Mr. MARKEY. There are some that argue that we should just keep the current system in place until we exhaust the BLM supply.

Mr. Spisak, would you agree that if we don't put reforms in place now, we could easily have even more disruption in the helium supplies, and potentially very severe price spikes and economic pain for those industries and for consumers down the road?

Mr. SPISAK. Well, from that question, the premise I am assuming is that the funding issue would be fixed, but we would still be offering helium at the same levels that we are now. And that would set up a situation where we are promising to deliver, through sales, more than we would be able to produce. And that would cause significant disruptions, yes.

Mr. MARKEY. So, in my opinion, Adam Smith would be spinning in his grave if he could see the way in which we were allocating this Federal resource to four companies at below market prices without competition. If we are going to avoid an even larger crisis and more severe price spikes in the future, we need to introduce some ruthless Darwinian-style competition into the helium market in order to incentivize private market investment.

And I thank you, Mr. Chairman and the witnesses, for this hearing.

THE CHAIRMAN. And I thank you for those statements. I am speechless, but I am so——

[Laughter.]

Mr. MARKEY. Can I say that Adam Smith's most important chapter is on monopolies.

THE CHAIRMAN. Yes.

Mr. MARKEY. And if you want to ever read something that will just——

THE CHAIRMAN. Yes, I——

Mr. MARKEY [continuing]. Make your heart start to beat faster.

THE CHAIRMAN. It has been a——

Mr. MARKEY. Monopolies——

THE CHAIRMAN. It has been a while since I have read "The Wealth of Nations," but I know you are talking about that Adam Smith, not my colleague from Washington, so——

[Laughter.]

THE CHAIRMAN. The Chair recognizes the gentleman from Virginia, Mr. Wittman.

Dr. WITTMAN. Thank you, Mr. Chairman. I would like to thank our panel members for joining us today.

Mr. Spisak, I want to address a question to you. In your testimony you pointed out that the legislation before us today would accomplish the original goals of the Helium Privatization Act by creating a glide path for the sale of helium.

And I want to ask you if you could explain to us what the repercussions would be if the BLM were to do a sale where they would do one mass sale, single sale, where all the helium would be sold off at one time? What potential effect would that have on the marketplace? And is that something that is in the realm of consideration for the BLM in putting in place dispensing with the helium reserves?

Mr. SPISAK. Well, I will answer the latter part first. We are not considering a mass sale in that fashion.

Dr. WITTMAN. OK.

Mr. SPISAK. Just off the top of my head, though, I think in doing it in such a manner, you would be putting out a lot more helium that would be able to be consumed immediately. And, very likely, the price could be much lower.

Dr. WITTMAN. Right.

Mr. SPISAK. Additionally, though, you could have a speculator that might come in and might want to corner the helium market, so to speak, and buy a whole bunch, that they may not be equipped to deal with. So I wouldn't see that as a viable option.

Dr. WITTMAN. OK. Let me ask you, too. I understand that somebody that is trying to purchase helium but is not part of the allocation doesn't have access to the pipeline to even purchase it. Can you tell me why that might be?

Mr. SPISAK. When we were developing some of our contract procedures, we recognized quite some time ago that there was more refining capacity already installed along the pipeline than what the field would be able to redeliver. And while we don't prohibit anybody else from installing additional capacity, we wanted to recognize that those that were there refining had installed a base, had a commitment in capital, that we wanted to ensure that there was a certain amount of helium to keep those existing plants loaded up.

Dr. WITTMAN. OK. How would you, in the future, for anybody that rightfully buys helium, assure that they have access to the pipeline?

Obviously, there are issues concerning people's access to it if they were to buy it and how they could transport it. Can you give us a little insight as to how that may occur?

Mr. SPISAK. Well, what you have currently proposed has some language in there about, in effect, opening up equal access to all that have an existing refining capacity. And if that is in place, we do have some storage contracts that are about to run their term. And it would be a matter of renegotiating those terms and basically opening it up to anybody that wants to build refining capacity.

I still believe, though, a company coming in making a large investment in a refining capacity at this stage, the barriers to entry to those types of expenditures may preclude additional folks from making those types of decisions.

But at the same time, as the field ages and there is lesser volumes of helium being produced, it may be appropriate to have a newer technology that can run and extract the helium at lower rates that might actually be what would be required to get us to the end.

Dr. WITTMAN. Yes, I think it is extraordinarily important as we look at how to deal with dispensing with the helium reserves, to make sure that there is indeed equal access, regardless of who is capitalized, who is not capitalized, who would decide to get in the marketplace. I think those things should be secondary to making sure there is equal access. If folks have that, then they can make their own economic decisions about how to get in there.

And I just want to be assured that you will make sure that happens as this process goes forward.

Mr. SPISAK. That can be done.

Dr. WITTMAN. OK, very good.

Thank you, Mr. Chairman. With that, I yield back.

THE CHAIRMAN. I thank the gentleman. And I will next recognize a new member of the Committee, Mr. Ruiz, from California. And if you are wondering why you are being recognized when you are down the list, we have a protocol on this Committee that members that are here when the gavel drops gets preference on asking questions. And you were here. So, Mr. Ruiz, you are recognized for 5 minutes.

[Laughter.]

Dr. RUIZ. I appreciate that. Thank you, Mr. Chairman. I am an emergency medicine physician, and so every day that I go into work, MRIs are a valuable resource to saving human lives. And so I appreciate the important role that helium has played for our patients and for all Americans throughout our country.

My question, Mr. Daniel Garcia-Diaz, can you give us an idea of how the global helium market might react if Congress does not pass H.R. 527, or similar legislation to extend the life of the Federal helium reserve? And what would this mean for high-tech manufacturing in the U.S. and researchers working on cutting-edge applications relating to energy, national security, and telecommunications?

Mr. GARCIA-DIAZ. Thank you. We haven't looked at the impact of not passing legislation extending the program beyond the dates in the 1996 Act. But if you look at the statistics behind the BLM reserve, that it accounts for over 40 percent of domestic helium and accounts for over 30 percent of international, or the global helium consumption, it is safe to say that it would have a very big impact if it were not available at this moment in time. And it would cut across all those industries that you have discussed.

Dr. RUIZ. How about you, Ms. Elmore?

Ms. ELMORE. I agree. I think it is just a matter of supply and demand. If you take that helium out of the supply, the demand is far going to exceed the supply, and there won't be enough.

Dr. RUIZ. This next question, Ms. Elmore. You state in your testimony that the OIG audit found that BLM has been operating without formal procedures for non-governmental helium sales since it assumed responsibility for the helium program in 1996. And you recommended that "BLM prepare and implement comprehensive procedures for managing its helium sales to non-governmental buyers."

Would transparency provisions like those included in H.R. 527 help prevent against waste, fraud, and mismanagement in the BLM helium program?

Ms. ELMORE. Yes, they will. The transparency provisions in the draft legislation, as an auditor, we love. They will lay out exactly what is happening, even down the minutes, the meetings between the refiners and the BLM. So I think the reporting procedures that were laid out add to the transparency. They will help BLM document their regulations. They will know what rules they have to comply with, and everybody working in that component will know what is expected of them.

Dr. RUIZ. Thank you very much, and thank you all for being here. I yield my time, Mr. Chairman.

THE CHAIRMAN. I thank the gentleman for his participation, and welcome to the Committee.

Next will be Mr. Daines from Montana, also a new member of the Committee. Welcome, and you are recognized for 5 minutes.

Mr. DAINES. Thanks, Mr. Chairman. This is for Deputy Director Spisak. Do you or somebody in the BLM do any type of price tracking to determine at what price the refined helium is being sold at after the crude is purchased at the significantly below-market-value prices? It goes back to that chart that we saw earlier.

Mr. SPISAK. A limited amount. When we were part of the Bureau of Mines, we had a much larger organization that kept up with helium uses and prices and such. When the Bureau of Mines went away in 1995, a lot of that capability left also.

Mr. DAINES. Right. And I guess maybe you could elaborate on the limited amount, what——

Mr. SPISAK. There is a USGS minerals commodity report that essentially the folks in Amarillo complete through a memorandum of understanding for USGS.

Mr. DAINES. All right. And then maybe, finally, if we look back, say over the last year, for example, would you have some kind of reporting that would show that gap?

Mr. SPISAK. We just don't have that type of information.

Mr. DAINES. OK. And one other question, just back on the supply and demand, the nature of helium. In your testimony you say that you support the goals of H.R. 527 and recognize the importance of keeping the reserve open. However, I think one day the reservoir will dry up and it will be time for us to pursue other ways to obtain helium.

Are there other domestic sources of helium besides this reservoir?

Mr. SPISAK. There are several. And several of those are producing from Federal mineral state. And part of the standard BLM oil and gas lease withholds does not transfer the helium, the contained helium in that gas.

And typically what happens is, as example, some of the plants in Southwest Wyoming that have a lot of Federal mineral state, we enter into a contract that authorizes the company to recover that helium, and when they recover it, that they provide it, in effect, like a royalty to the government for that sale.

Mr. DAINES. And last follow-up and then I will yield the rest of my time back.

Do you recognize access to natural gas reserves on public lands as a potential obstacle to natural gas development, and therefore, the capture of crude helium?

Mr. SPISAK. The development of natural gas being——

Mr. DAINES. On public lands, yes. I represent the State of Montana. In terms of natural gas development, of which helium is a byproduct there.

Mr. SPISAK. I think the two are related, certainly, because helium will be found in all natural gas. It might be down to the parts-per-billion range in some, but it is really the rule of thumb, if there is three-tenths of a percent of helium in the natural gas, then it could be recovered.

Certainly with the natural gas liquids processes, that threshold is lower. But there has to be a certain amount in there for the economics to work out.

Mr. DAINES. Mr. Chairman, I yield back the rest of my time.

THE CHAIRMAN. I thank the gentleman for his questions, and I recognize the gentlelady from Hawaii, Ms. Hanabusa.

Ms. HANABUSA. Thank you, Mr. Chairman. Mr. Chairman, I would like to yield my time to the Ranking Member of the Subcommittee of Energy and Mineral Resources. Thank you.

Dr. HOLT. I thank my friend and colleague. I would like to pursue the kinds of questions that Mr. Daines and others have been asking. Much of the discussion about supply and demand curve is whether the price is fair. But I wanted to look at it from the other point of view of how can we ensure supply.

It seems to me that the history shows that if it hadn't been for some far-sighted people years ago, we would be in short supply of helium now. And I wanted to pursue that, understand really what happened back in the 1960s, and what is happening in the world at large now.

So, Mr. Spisak, let me start with you. How dependent is the helium production on the market price? Now, I realize maybe asking the BLM, that is asking the wrong person, but we have to get this somehow. To what extent would a free-market-based pricing system, auction or otherwise, ensure adequate supply?

Mr. SPISAK. It will be a step in the right direction. However, natural gas production, which the helium production is dependent on, is a much bigger enterprise. And the small amount that the helium brings is sometimes maybe seen as a hindrance. And it may not be put forth to recover. So, certainly, as the price goes up and as time goes on, the price goes up further, there will be more incentive to put up with the hindrance and recover that helium.

Dr. HOLT. The reason I ask the question is back in 1960 most of the uses of helium today were not foreseen. And I imagine much of the demand for helium in coming decades will not be foreseen today. And so, today's market may not lead us to set aside helium. Now, it may be that there will be enough natural gas in future years that we can get it, but some of the reserves of natural gas out there, I think, are not so rich in helium.

So, let me pursue this line of questioning a little further. Maybe this is for Mr. Diaz. What are other countries doing? And for the privately produced helium here, how much is production determined by the price today?

So, let me ask first Mr. Spisak, maybe you have said all you have to say on that subject, and then turn to Mr. Diaz.

Mr. SPISAK. Well, I think you are right about back in the 1960s. I think we might live in quite a different world if helium wasn't around as such to allow for some of the research and things like that that have gone on. But, I have a feeling I know what Daniel is going to say, but I think your panel three with some of the sources will have maybe a really good idea, or maybe convey some of the information about international supplies coming on, and the effects on price.

Dr. HOLT. Mr. Diaz, in the minute that remains?

Mr. GARCIA-DIAZ. Yes, right now, based on some of the information from USGS and BLM, there is kind of a supply response happening. But it is slow in the making. So some added production is being developed in other countries, but it will be a while before those come online.

There is a greater demand in application for helium. We don't know what it will be 10 or 20 years from now, that is true. But right now there are a lot of industries that are relying on it for manufacturing. The space industry will still continue using it. The Department of Defense will still be using it. So——

Dr. HOLT. If we let the stockpile be depleted completely, might we run into some supply problems as new uses emerge? This has to be a very quick answer, I think.

Mr. GARCIA-DIAZ. We haven't done work to forecast that, to understand if we would deplete it and be in a bad situation.

Dr. HOLT. Thank you.

THE CHAIRMAN. The time of the gentleman has expired. I recognize the gentlelady from Wyoming, Ms. Lummis.

Ms. LUMMIS. Thank you, Mr. Chairman. Mr. Spisak, does the BLM have the resources and the technical expertise to administer an auction like the one that is described in the Hastings bill?

Mr. SPISAK. Yes, I believe we do.

Ms. LUMMIS. For all the witnesses, we know that refiners have said that the Secretary always has had the authority to increase the price of helium under the current way it does business. So the new system of setting a fair-market price is not necessarily warranted. Can you explain why the Secretary did not increase prices over the minimum price?

Mr. SPISAK. Over the history of the program there is a lot of interaction with the BLM and industry. And at various times during that history there has been interaction with Congress and others about how we manage the program. Part of that came through in the 1996 Act.

Ms. LUMMIS. OK.

Mr. SPISAK. I would say, generally speaking, we are going to take an approach of a path to least resistance when it comes to pricing. It started out being much higher, and then we started having those shortages in 2004, 2005, and 2006. That led us to having the academies refreshen the study and they came up with, basically, almost a 90 or almost a 180 degree turn from the 2000 report. And so, we tend to move slower than many would like. But that was part of the process that we went through to start raising that price.

We have talked about a fair-market price. That has always been a very difficult thing to determine.

Ms. LUMMIS. Right.

Mr. SPISAK. And it is easy to say, "Charge a fair-market price." But the data is not there, just to pick out that number. If it was easy, it would have been done already.

Ms. LUMMIS. Another follow-up question for you, Mr. Spisak. How confident are you that, using the tools that are prescribed in this piece of legislation, it is the confidential survey and the market analysis, that you could reach a minimum price that is more relative to market price?

Mr. SPISAK. Well, using the minimum price, and we are kind of going down that path already with the Inspector General recommendations, and we are working with our Office of Mineral Evaluations and, actually, my understanding is they are going to contract that out, that evaluation, because of a lot of the proprietary information that you are talking about.

We believe we will be able to pull together that information and, using the auction mechanism and the minimum pricing together, we will be able to meet the objectives.

Ms. LUMMIS. Well, Mr. Chairman, a couple more questions because your answer just led me into my next question.

Do you envision that this minimum price would be confidential? In other words, would the minimum price that you establish be published as the starting bid? Or would it be held back and companies would bid blindly, like they do under the co-lease program?

Mr. SPISAK. Given the concerns of transparency that have been conveyed in the bill, I would expect that we would publish the minimum price, and that would be posted.

Ms. LUMMIS. Oh, OK. Couple more questions, Mr. Spisak. Written testimony offered by the refiners indicates their belief that the BLM is under contract to offer access to the helium extraction unit and the pipeline. Do you share that opinion? This is with regard to the current system of allotment, granting three refiners near-exclusive access to the Federal helium stockpile.

Mr. SPISAK. Well, the storage contracts that I mentioned, and I have seen in some of the testimony they are referring to, go into 2015. Given the delay that is built into the Act as written would have a buffer time that would get us close to that point. I believe we would be able to thread that needle, as it were, to close that out and move forward post-2015, with a more open process with an auction.

Ms. LUMMIS. Now, with regard to the contract, in your opinion does that contract terminate with the end of the debt repayment program?

Mr. SPISAK. No, the storage contracts were in place starting in 1995, and were actually a follow-on from previous storage contracts. They don't really tie to the helium debt at all.

Ms. LUMMIS. OK. Mr. Chairman, thank you. I yield back.

THE CHAIRMAN. I thank the gentlelady for her questions, and I thank all of the Members for their questions. In particular, I want to thank the first panel. I thought your testimony was very enlightening, and it certainly is in line with the intent of those of us that have cosponsored the bill.

So, with that, I will dismiss the first panel and, if we could, call up the second panel: Mr. Rodney Morgan, Brad Boersen, Gary Page, and Dr. Sam Aronson.

Thank you all for being here. I am going to introduce the panel out of order, because I understand that Mr. Morgan is a constituent of Mr. Labrador, and he wants to be here for the proper introduction. So I don't know if that was prearranged or not, Mr. Morgan, but you are on the hot seat, anyway.

We have, starting on my right, we have Dr. Sam Aronson, Vice President of APS Physics. Next to him we have Gary Page, President of Helium and Balloons Across America. And then we have

Mr. Brad Boersen, Director of Business Strategy of the Optical Fiber and Cable Telecommunications Business Group of Corning, Incorporated.

And I see that Mr. Labrador isn't here, so he has missed out on this, and Mr. Morgan, you have missed out on it, apparently. You are Vice President of Procurement of Micron Technology out of Boise, Idaho.

Now we will go in order. And, Mr. Morgan, you are recognized for 5 minutes.

But before I recognize you, I am sure you heard what I said to the previous panel. The full statement that we ask of you will appear in its entirety in the record. But I would ask you to keep your oral statements within the 5-minute mark. And again, when the green light is on, you are doing well. When the yellow light comes on, it means there is 1 minute left. And if the red light comes on, it means your time is expired.

So, Mr. Morgan, recognize you for 5 minutes.

STATEMENT OF RODNEY MORGAN, VICE PRESIDENT OF PROCUREMENT, MICRON TECHNOLOGY

Mr. MORGAN. Mr. Chairman, members of the Committee, thank you for the opportunity to testify on H.R. 527, The Responsible Helium Administration and Stewardship Act. On behalf of Micron and the Semiconductor Industry Association, our industry trade association, I am here to lend my voice to the growing chorus of manufacturers concerned about the eminent closure of the Federal helium reserve. H.R. 527 is important legislation for the semiconductor industry. It will ensure the continued operation of sales of helium from the Federal helium reserve, providing a stable and secure supply of critical material for the next few years.

Founded nearly 35 years ago in Boise, Idaho, Micron has grown into a company of 25,000 people, and a global leader in the computer memory technology arena. In fact, we are the only pure play memory manufacturer based in the United States. The semiconductor industry is a signature American industry, and one in which we still lead. It is a key driver of the economy, employs a quarter-million people, and is one of the country's top exporters. Helium is just one of a number of gases used to make memory chips, but it is absolutely vital.

Put simply, without helium, we cannot operate. Helium's unique physical and chemical properties make it critical to the manufacture of semiconductors. Some principal uses are as carrier gas for deposition processes, as dilutant in plasma edge technologies, and in some specialized ways for cooling applications.

In some applications, alternatives to helium, such as argon or nitrogen, may be used. But this typically results in a decrease in manufacturing output. Micron has been working to develop alternatives to helium, but for some processes we have been unable to find another option. Alternatives could also result in costly, unproven retrofits to tools used that make our products.

For all its great properties, helium is really difficult to manage. Because it is a small molecule, it quickly leaks out of containers. Due to the problems associated with storing helium, we are dependent on regular deliveries. A delay of even a few days could

slow production at a semiconductor facility. A significant delay could idle a plant entirely.

It is worth noting we are already facing supply shortages. In fact, for most of the past year, we have been receiving a lower percentage of helium for which we have contracted. Again, Micron is not unique in this situation. All users of helium have had to struggle through reduced helium deliveries. As everyone here today knows, the Federal helium reserve operated by the Bureau of Land Management comprises a significant portion of the world's helium supply.

What would happen if helium reserve were to stop making available sale to the private entities? It is hard to say for certain, but there is no question that it would be disruptive to the market. If supplies were disrupted for a significant period, it could even impact the overall economy. A significant delay might not just slow the production of computer chips, but the computers, lifesaving medical devices, and weapons systems they power. That is an unacceptable scenario.

Micron technology and the Semiconductor Industry Association are absolutely committed to ensuring a stable, secure supply of helium. H.R. 527, Responsible Helium Administration and Stewardship Act, represents a significant step forward in addressing the concerns associated with the helium supply from the reserve. The bill provides the continued operation of the Federal helium reserve and the sale of helium to private entities, thereby helping to ensure a stable and secure supply of helium in the near future. It provides price transparency through clear reporting requirements for both the BLM and those who purchase the helium. H.R. 527 also provides some protection against market speculation and it provides an ample transition period.

I should note that the auction system envisioned by the bill would pose some uncertainty for helium users and our practice of entering into long-term supply contracts. But we believe the bill provides the Secretary of the Interior with the discretion to manage those uncertainties. These concerns should not delay the need to address this issue immediately. H.R. 527 is important and urgently needed legislation to address the helium supply.

We applaud Chairman Hastings, Ranking Member Markey for their work on this bill, and we urge the full House to consider the legislation soon.

Again, thank you for the opportunity to testify. Mr. Chairman, I am happy to answer any questions.

[The prepared statement of Mr. Morgan follows:]

Statement of Rodney Morgan, Vice President of Procurement, Micron Technology

Mr. Chairman, thank you for the opportunity to testify on H.R. 527, "The Responsible Helium Administration and Stewardship Act." My name is Rodney Morgan and I am the Vice President of Procurement for Micron Technology. In this capacity I oversee all purchasing by Micron, including critical materials like helium.

On behalf of Micron and the Semiconductor Industry Association (SIA),[1] our industry trade association, I am here to lend my voice to the growing chorus of manu-

[1] More information on Micron is available at www.micron.com. Additional information on SIA, including a list of members, is available at www.sia-online.org.

facturers concerned about the imminent closure of the Federal Helium Reserve. H.R. 527 is important legislation for the semiconductor industry. It will ensure the continued operation of and sales of helium from the Federal Helium Reserve, providing a stable and secure supply of a critical material for the next few years.

Founded nearly 35 years ago in Boise, Idaho, Micron has grown into a global leader in computer memory technology. In fact, we are the only pure play memory manufacturer based in the United States. In addition to our headquarters in Boise, we have major manufacturing operations in Lehi, Utah, and Manassas, Virginia, as well as in Asia and in Europe. Micron also has design and research and development facilities in California, Texas, Colorado, and Minnesota. In all we employee more than 25,000 people, approximately half of which are in the United States.

The U.S. semiconductor industry is a key driver of the economy and one of our top exports.[2] Semiconductors are the basic building block of all modern electronics, and every year approximately 250,000 Americans work together to produce millions of computer chips that make smart phones, GPS, and MRI's possible. It is a signature American industry and one in which we still the lead.

Manufacturing semiconductors is an incredibly complex process. It takes weeks and hundreds of processes to make a chip, using sophisticated equipment and techniques developed by the world's leading scientists and engineers.[3] The technology is constantly evolving to produce faster and better products. It is also an incredibly capital intensive business. A typical semiconductor manufacturing facility is a multibillion dollar investment. Micron typically introduces a new product every six months. We introduced two just last week, for instance. But for all the technology, many of the processes and materials are fairly basic. Helium is just one of a number of gasses used to make our memory chips, but it's absolutely vital. To put it simply, without helium, we cannot operate. Micron is not alone in its dependence on this crucial gas.

Helium's unique physical and chemical properties make it critical to the manufacture of semiconductors. Helium is inert, has a low boiling point (4 Kelvin, near absolute zero), and high thermal conductivity. Some principle uses of helium in the semiconductor industry are as a carrier gas for deposition processes, as a dilutant in plasma etch processes, and in some specialized wafer cooling applications.

Helium is used to achieve ultra-clean manufacturing and assembly environments that are essential for advanced semiconductor manufacturing.[4] According to the National Academy of Sciences, semiconductor and optical fiber manufacturing account for 13 percent of total helium usage.[5] Suppliers to the industry have indicated that semiconductor manufacturing accounts for approximately 6 percent of helium usage. Although the semiconductor industry consumes only a small amount of the overall quantity of helium used today, it remains a critical, irreplaceable input into our manufacturing process.

In some applications, alternatives to helium such as argon or nitrogen may be used, but this typically results in a decrease in manufacturing output. Micron has been working to develop alternatives to helium, but for some processes, we have been unable to find another option. Alternatives could also result in costly, unproven retrofits to the tools used to make our products.

For all its great properties, helium is really difficult to manage. Because it is a small molecule, it quickly leaks out of containers. Anyone who has filled a latex balloon with helium only to find it on the ground the next day, has witnessed this. Due to the problems associated with storing helium, we are dependent on regular deliveries to our facilities. A delay of even a few days could slow production at a semiconductor facility. A significant delay, could idle a plant entirely. This possibility would result in significant costs to our company, the industry and country as a whole.

It's worth noting that we are already facing supply shortages. In fact, for most of the past year, we have only been receiving about 80 percent of the helium for which we have contracted. Again, Micron is not unique in this situation. All U.S. users of helium have had to struggle through reduced helium deliveries.

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[2] There are 244,800 direct jobs in the industry. SIA has also calculated that there are 1.1M indirect jobs.

Source: calculations based on Official U.S. Government data from the U.S. Bureau of Labor Statistics

[3] USPTO granted 913 patents to Micron in 2012, and six of top 15 U.S. companies were semiconductor companies (IBM, Qualcomm, Intel, Broadcom, Micron, and Texas Instruments).

Source: USPTO, compiled by IFI Claims

U.S. semiconductor industry invests on average 15–20 percent of sales in R&D. In 2011, U.S. industry invested 18 percent of total sales (or $27 billion) in R&D Source: WSTS and IC Insights

[4] "Selling the Nation's Helium Reserve" (2010) at pp. 63, 67.

[5] "Selling the Nation's Helium Reserve" (2010) at p. 17.

As everyone here today knows, the Federal Helium Reserve operated by the Bureau of Land Management comprises a significant portion of the world's helium supply. What would happen if the helium reserve were to stop making helium available for sale to private entities? It's hard to say for certain, but there is no question that it would be disruptive to the market. And for reasons already mentioned, it has the potential to be damaging to U.S. manufacturers, and the semiconductor industry in particular. If supplies were disrupted for a significant period it could even impact the overall economy. That may seem like a stretch, but we should not forget the impact flooding in Thailand had on the shipment of hard disk drives.

In November of 2011, widespread flooding in Thailand forced a number of hard disk drive manufacturers to halt production. Fewer hard disk drives were shipped, leading to price increases and shortages.[6] Now imagine not just the delay of computer chips, but the computers, life-saving medical devices, and weapons systems that they power. That's an unacceptable scenario.

Congress must act to prevent the looming helium shortage. BLM's authority to operate the reserve is set to expire, and it requires an act of Congress to keep the reserve open. As such, SIA worked with a group of helium end-users to develop a set of principles that we thought should be included in any legislation to address the helium supply. These were:

1. Establish a framework for secure, continuous supplies of helium that can be implemented through long-term contracts with suppliers.
2. Ensure price transparency.
3. Provide for mechanisms to prevent market speculation or manipulation.
4. Adequate transition period to assure continuity in supplies.
5. Promote increased supplies of helium in the future.

When used to evaluate H.R. 527, "The Responsible Helium Administration and Stewardship Act," we see that it is largely consistent with the spirit of these principles. The bill provides a framework for a secure supply. It provides price transparency through clear reporting requirements for both the BLM and those who purchase the helium. H.R. 527 also provides some protection against market speculation. And it provides an ample transition period. The new approach envisioned by the bill would pose some uncertainty for helium users and our practice of entering into long term supply contracts, but we believe the bill provides the Secretary of the Interior with the discretion to manage those uncertainties. These concerns should not delay the need to address this issue immediately.

Micron Technology and the Semiconductor Industry Association are absolutely committed to ensuring a stable and secure supply of helium. H.R. 527, "The Responsible Helium Administration and Stewardship Act," represents a significant step forward in addressing the concerns associated with the helium supply from the reserve. The bill provides for the continued operation of the Federal Helium Reserve and the sale of helium to private entities, thereby helping to ensure a stable and secure supply of helium in the near term. It is important and urgently needed that the House act on legislation to address the helium supply. We applaud Chairman Hastings, and Ranking Member Markey for their work on this bill, and we urge the full House to consider the legislation soon.

Again, thank you for the opportunity to testify, Mr. Chairman. I am happy to answer any questions.

Response to questions submitted for the record by Rodney Morgan, Vice President of Procurement, Micron Technology

*Micron Technology and the Semiconductor Industry Association (SIA) is pleased to provide this response to the Question for the Record posed by Representative Markey in a letter from the Natural Resources Committee dated March 11, 2013. The question from Rep. Markey is as follows:

> "At current drawdown rates, in 5 to 8 years, the helium in the BLM Reserve is anticipated to be largely depleted. Should Congress consider steps to provide for a long-term helium stockpile? If so, what steps do you believe Congress should take?"

Helium is used in increasing amounts in a range of advanced manufacturing processes, including the production of semiconductors, but there is a global supply shortage that has resulted in Micron and others in the semiconductor industry receiving a limited "allocation" of supply. While a number of new sources of helium are expected to come online in the near future, it remains unclear whether the private

[6] Thomas Fuller, **"Thailand Flooding Cripples Hard-Drive Suppliers," The New York Times, 11/6/11**

sector will be able to meet the increased need for helium by government entities, industry and the scientific community. Therefore it is appropriate for the federal government to maintain some form of strategic reserve of this important material to prevent supply disruptions in the future.

A more difficult question is the steps Congress should take to address the long term helium needs of the industrial and scientific community. Unfortunately, we are not aware of any simple fix to the challenge of long-term helium supplies, but we believe that Congress should make this issue a priority. Some of the provisions in H.R. 527 may result in an improved climate for the supply of helium. First, establishing a market price should result in increased helium supplies over time by encouraging more private investment. Second, the transparency provisions set forth in Section 5 will provide information that will allow all stakeholders to make better informed decisions about the production, storage, and use of helium.

We also suggest that Congress should take the following steps:

- Direct the appropriate federal agencies, or the National Academies, to publish a study to address issues related to the helium supply and uses that would include the following:
  1. Techniques to improve and increase the capture of helium from gas wells.
  2. Improved methods for the conservation, recapture, and recycling of helium in current applications.
  3. Alternatives to helium in non-critical applications.
- Consider appropriate incentives for increased production and storage of helium.

We appreciate the Committee's consideration of our views.

THE CHAIRMAN. Thank you very much, Mr. Morgan, for your testimony. And I will recognize Mr. Boersen of the Corning Corporation for your testimony. And you are recognized for 5 minutes.

STATEMENT OF BRAD BOERSEN, DIRECTOR, STRATEGIC PLANNING AND ANALYSIS FOR OPTICAL FIBER, CORNING INCORPORATED

Mr. BOERSEN. Thank you, Chairman Hastings and Ranking Member Markey. Corning appreciates your leadership and bipartisan cooperation on the important issue of the Federal helium reserve. I am Brad Boersen, Director of Business Strategy for Corning's fiber and cable business.

Corning has been in business for over 160 years, and was founded by the great-great-grandfather of Amo Houghton, Jr., who served with many of you in the House for 18 years. Invention and innovation have been the keys to Corning's success throughout our history. This has led to life-changing inventions, such as optical fiber, catalytic converters, and glass for liquid crystal displays.

While I am here representing Corning, we are also part of an informal coalition of end users representing medical imaging, semiconductors, fiber optics, chemicals, aerospace, and science, and research. As a whole, these end users play a major role in the U.S. economy. The coalition's main priority is to ensure a secure and sufficient supply of reasonably priced helium. And so we are focused on expeditious passage of legislation to keep the reserve operating. Our efforts are guided by a set of five principles, and I will say more about them in a minute.

Let me first explain the use of helium in optical fiber manufacturing. Corning is the world's largest producer of optical fiber. Our competitors are in Japan, China, India, Europe, and North America. The fiber-making process begins by creating a glass rod, which is termed a pre-form, which is heated close to its melting point and drawn into fiber. The fiber is the diameter of a human hair, with

dimensional precision at the one-micron level. It is then tested at strength at at least 100,000 pounds per square inch.

Helium is used to manufacture the pre-form, and there is presently no substitute for helium in this portion of the process. Corning has been concerned about the depletion of the BLM reserves since 2007, when we first experienced helium shortages. As we evaluated the security and availability of supply, we projected BLM would reach its limit by about 2018, if not sooner.

Based on this projection, Corning began to pursue more aggressive conservation measures, such as reuse and recycling, which we have been doing for 17 years. Additionally, we have invested over $10 million in R&D since 2007 to reduce consumption. And we will continue these investments.

Now, let me turn to H.R. 527. This bill represents significant progress, and the Committee is to be commended. Let me highlight three key principles: transition, transparency, and supply.

First, we appreciate the inclusion of a 1-year transition period. This provision is significant. And it is necessary for BLM to establish the process and procedures, as well as for refiners, distributors, and end users, to determine how best to operate under the new system.

Second, we strongly support the transparency provisions in section 16. Because the BLM represents a significant share of the global helium supply, its actions have a major impact on helium supply to all end users. The provisions will make critical information available to manufacturers that will improve supply chain responsiveness and efficiencies.

We believe if these provisions had been in place last spring, Corning would not have incurred significant increased costs as a result of allocation measures imposed on us with limited notice.

Third, we are pleased the Committee reduced the frequency of auction from quarterly to twice annually. We believe fewer auctions minimize uncertainty of supply. While we would prefer a more gradual adjustment to the process, we understand the Committee's goal to establish a more market-driven pricing mechanism and, therefore, maximize taxpayer revenue.

So, let me summarize the three key principles driving Corning's focus on the helium legislation. First, supply, supply, supply. Maintaining BLM's operation of the helium reserve is job one. Second, transition. Business thrives on certainty. And time to shift from the existing system to an auction process is essential. Finally, transparency. In a constrained market, where every molecule of helium is needed, the more information about supply, the better. These provisions will allow end users to react sooner and adjust more quickly to handle disruptions.

We commend the Committee for its leadership on this issue, and look forward to continuing to work with you. Thank you.

[The prepared statement of Mr. Boersen follows:]

Statement of Brad Boersen, Director, Business Strategy, Optical Fiber and Cable—Telecommunications Business Group, Corning Incorporated

Introduction

Thank you Chairman Hastings and Ranking Member Markey for the opportunity to be here today. Corning appreciates your leadership and bipartisan cooperation on the important issue of the Federal Helium Reserve.

I am Brad Boersen, the director of Business Strategy for Corning's Optical Fiber and Cable business. My responsibilities include global strategic planning, market analysis and forecasting, and business development.

Corning Incorporated (Corning) is a world leader in specialty glass and ceramics. We have been in business as an American manufacturer for over 160 years. We were founded in 1851 by Amory Houghton, the great-grandfather of Amo Houghton, Jr., who served with many of you in the House for 18 years.

We research, develop, and manufacture a wide range of intermediate products including optical components for telecom networks, mirror blanks for space telescopes, and Corning Gorilla® Glass, a product which is now on more than one billion consumer electronic devices. Corning has a long history of technology innovation and is a four-time recipient of the President's National Medal of Technology and Innovation. One of those four medals was awarded to Corning for its invention of optical fiber. We remain a global leader in optical fiber manufacturing and technology. We continue to operate the world's largest and most advanced optical fiber manufacturing facility here in the United States.

End-User Coalition

While I am here representing Corning, I wanted to acknowledge that Corning also is part of an informal coalition of end-users representing a number of important industries, including medical imaging, semiconductors, fiber optics, chemicals, aerospace, and others that depend on helium for essential applications. In addition, helium is an important gas for the scientific and research community. As a whole, these users of helium play a major role in the U.S. economy, national security, and scientific advancement.

The Coalition's main priority is to ensure a secure and sufficient supply of reasonably priced helium. This will not be possible without expeditious passage of legislation to allow BLM to continue to extract helium from the reserve. The Coalition developed a set of principles to guide our deliberations and discussions with the Committee. This coalition appreciates the work of the Committee and its subcommittee staff, both majority and minority, to address our key principles.

The principles are:

1. Establish a framework for secure, continuous supplies of helium that can be implemented through long-term contracts with suppliers
2. Ensure transparency
3. Provide for mechanisms to prevent market speculation or manipulation
4. Transition period to assure continuity in supplies
5. Promote increased supplies of helium in the future

I will discuss the principles in more detail later in my statement.

Optical Fiber Manufacturing

Corning is the world's largest producer of optical fiber and the only U.S.-owned company making optical fiber. We compete with optical fiber manufacturers in Japan, China, India, and Europe. We employ about 1,600 people in the United States in our optical fiber business.

Optical fiber changed the way the world communicates. About 1.8 billion kilometers of optical fiber are deployed worldwide, connecting people, business communities, countries and continents. We continue to innovate for new applications and markets.

The fiber making process begins by creating a glass rod or "preform", with the deposition of the materials controlled so precisely that impurities are measured in parts per billion. The preform is heated close to its melting point and drawn into fiber before being coated with an acrylate protective layer (or "coating"). The fiber is the diameter of a human hair, with dimensional precision at the one-micron level. It is tested for strength at 100,000 pounds per square inch.

As the National Academy of Sciences reported, helium is used to manufacture the preform. Helium is the only gas that prevents bubbles from forming in the preform manufacturing step, which would render the fiber unusable. There is presently no substitute for helium in this process. It is also commonly used to cool the fiber as it is drawn.

We require helium in sufficient quantities and at prices that enable us to maintain our global cost competitiveness. Given the unique qualities of helium, it is difficult to store on site for more than 10 days. For this reason, and the global nature of our demand, we have established strategic supplier relationships and long-term supply agreements.

Corning has been concerned about the depletion of the Bureau of Land Management (BLM) reserve since 2007, when we first experienced helium shortages that required suppliers to enforce allocation restriction on end-users. This event drove

Corning to evaluate the on-going security and long-term availability of supply. Based on this evaluation, we projected from BLM and USGS data, that BLM will reach the depletion limit of 3 billion cubic feet by about 2018, if not sooner.

This realization led Corning to pursue more aggressive conservation measures such as reuse and recycling. Corning recognized the significance of helium reuse/recycling early on and have engaged in this practice for over 17 years. We have invested over $10 million in R&D since 2007 to reduce consumption. We will continue to invest millions in R&D to further identify ways to reduce helium use or find an acceptable substitute.

Unlike the 2007 allocation experience which was brief, the 2012 supply allocation that was imposed by suppliers in the spring remains in effect and is expected to continue given market conditions.

The Responsible Helium Administration and Stewardship Act (H.R. 527)

The Committee has worked hard to ensure the broad range of concerns and interests of all parties affected are addressed and we believe that H.R. 527 represents significant progress. As mentioned above, the coalition principles have provided a foundation to guide our assessment of the legislation. Corning would like to focus on three of the principles: transition, transparency and supply.

First, we appreciate the inclusion of a one-year **transition** period. This transition period will allow BLM to establish the auction process and procedures. Further, the transition will allow refiners, distributors and end-users time to evaluate the impact on existing contracts and determine how best to operate under the auction system. This provision is significant.

Second, we strongly support the **transparency** provisions in Section 16 of the legislation. Because the BLM represents a significant share of the global helium supply, its actions have a major impact on helium supplies to federal, industrial, medical and other commercial users. The provisions will provide manufacturers critical information necessary to adjust in a timely manner to planned and unplanned disruptions of the reserve. We believe if these provisions had been in place last spring, Corning would not have incurred significant increased costs as a result of allocation measures imposed on us with limited notice. The provisions bring transparency at the production level that will improve supply chain responses and efficiencies.

Third, we are pleased that the committee reduced the frequency of auction from quarterly to twice annually. We believe fewer auctions **minimize uncertainty of supply.** While we would prefer a more gradual adjustment to the auction process, we understand the Committee's goal to establish a more market-driven pricing mechanism and, therefore, maximize the taxpayer revenue.

Manufacturers' value chains are a global web of suppliers and customers that must be coordinated to ensure responsive delivery, often within 24 hours. Managing these relationships and meeting the demands of our customers, require careful planning, precision processes and carefully negotiated contracts to ensure maximum certainty and security of supply.

H.R. 527 establishes an auction system, which represents a change from existing practices. Our focus, in this process, has been to ensure that any new process adequately addresses end-users concerns about reliable supply, as the system contemplated may prevent end-users from knowing which refiners have available supply. Under existing practices, end-users have established supply chains and legally binding long-term supply agreements. These are important, because Corning, like most manufacturers, requires refined helium.

Conclusion

For Corning, like most end-users, our top priority is ensuring that Congress expeditiously passes legislation allowing BLM to maintain operations of the helium reserve.

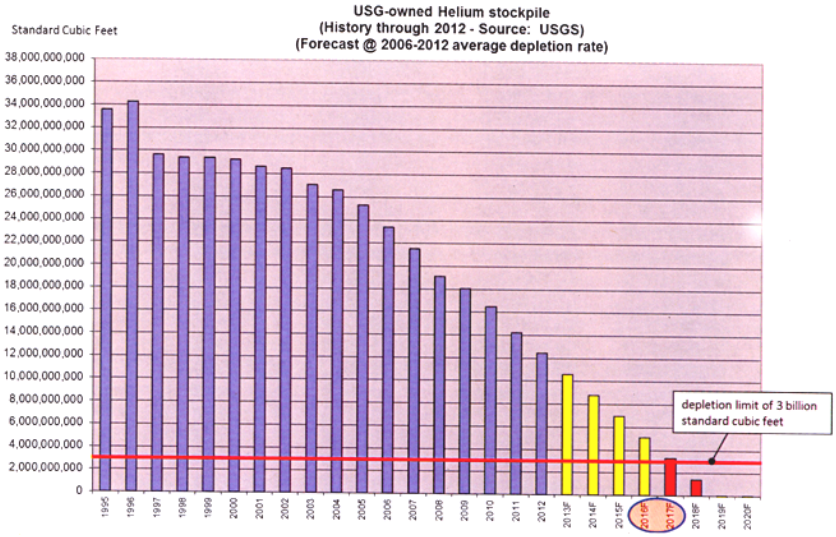
So let me summarize the three key principles driving Corning's focus on helium legislation:

1. Supply, supply, supply. In the constrained helium market, maintaining BLM's operation of the helium reserve is critical.
2. Transition. Business thrives on certainty and part of ensuring adequate supply is having an adequate transition period to shift from the existing system to an auction process. And to have the flexibility in that process to minimize supply disruptions.
3. Transparency. In a constrained market where every molecule of helium is needed, the more information the better. Providing data regarding BLM's operations, maintenance schedules and other factors affecting supply will allow end-users to react sooner and take more effective action to adjust and plan for disruptions.

In conclusion, we commend the Committee for its leadership and decisive action. We look forward to continuing our work with you to maintain the operation of the BLM helium reserve.

Thank you.

Appendix: Estimate of BLM Helium Stockpile Depletion



Response to questions submitted for the record by Brad Boersen, Director, Strategy Optical Fiber and Cable, Corning Incorporated

Corning Incorporated is pleased to provide this response to the Question for the Record posed by Representative Markey in a letter from the Natural Resources Committee dated March 11, 2013. The question from Rep. Markey is as follows:

"At current drawdown rates, in 5 to 8 years, the helium in the BLM Reserve is anticipated to be largely depleted. Should Congress consider steps to provide for a long-term helium stockpile? If so, what steps do you believe Congress should take?"

Given the unique characteristics of the helium market, we believe it would be prudent to consider a long-term helium stockpile that could be used to mitigate future supply disruptions. The global supply disruptions that have occurred recently, and the negative effects as described in the hearing on February 14, highlight the importance of helium in advanced manufacturing. The disruptions have occurred due to maintenance problems at existing Helium operations, and delays in bringing new sources on line. It is unclear when these new sources may come on line and how reliable their supply will be. Once the BLM reserve is depleted, the U.S. may become reliant on foreign-sources of helium, a situation that has not previously occurred to our knowledge.

With the current shortages of helium, it is difficult to know exactly what steps would be most effective to create a long-term stockpile. We believe that many of the provisions of H.R. 527, specifically the transparency provisions in Section 4, BLM transparency and supply chain information, and Section 5, helium resource assessment, will provide critical information for all stakeholders, allowing for better informed decisions throughout the supply chain.

We would suggest that Congress consider the following steps:

- Authorize support for RD&E to develop and deploy helium conservation and improved storage technologies
- Authorize incentives for helium recycling and reuse in current applications

- Direct the appropriate federal agencies, or the National Academies, to publish a study to address issues related to the helium supply and uses that would include the following:
  - Ways to expand domestic helium sources
  - Improved methods for conservation, recapture and recycling of helium
  - New technology to improve and increase the capture of helium from gas wells, including gas streams with low concentrations of helium
  - Develop viable alternatives to helium where appropriate

We appreciate the Committee's interest in this important matter and the consideration of our views.

THE CHAIRMAN. Thank you very much, Mr. Boersen, for your testimony. I will now recognize Mr. Gary Page, who is President of Helium and Balloons Across America.

Mr. Page, you are recognized for 5 minutes.

STATEMENT OF GARY W. PAGE, PRESIDENT, HELIUM AND BALLOONS ACROSS AMERICA

Mr. PAGE. Mr. Chairman, members of the Committee, thank you for this opportunity to testify today on the Responsible Helium Administration and Stewardship Act. My name is Gary Page, and my company, proudly based in Christian principles, Helium and Balloons Across America, or the acronym HABAA, started in my home in Charlotte, North Carolina, and has been servicing our customers for over 32 years with balloons and helium.

When we secure a national contract such as K-Mart, we solicit partnerships locally for helium distribution, and handle orders centrally through HABAA for better customer service, accountability of cylinder assets, mostly under supply contract agreements. Eventually, HABAA was distributing helium across the United States. Today is Valentine's Day. And, coincidentally, February 14th is the largest retail balloon sales day of the year.

However, as I testify today, hundreds of my best customers are either without helium or have received a ration that will not allow them to meet the demands of the day. This is the second year in a row, and I hope, with the passage of H.R. 527, the last.

The market has become so tight for helium that HABAA has two employees who are dedicated to searching for helium supply and managing our vendor relationships. We have hundreds of customers who have been waiting for up to a year for delivery of a single helium cylinder, with no real prospect that they will be serviced. Before this shortage, a typical cylinder delivery would take a few days. HABAA has grown from 3 vendor partners to 93, with several hundred more vendors waiting. Even a company as large as Airgas can geographically help HABAA in less than 16 percent of their service area.

In 2006, there were shortages of helium and price spikes dramatically every few months. There seemed to be less product available to some customers than to others, specifically to those selling balloons. Upon further investigation, it was my conviction that there was plenty of helium, but that the refiners had made business decisions to sell their product for higher profits, usually overseas.

All domestic uses for helium, liquid and gas, require 2.4 billion cubic feet per year. By comparison, 4.8 billion cubic feet are refined in the U.S. each year. In other words, two times the need. I found

some older, proven technology for the refinement of helium called Nitrotec, and purchased a system which was being taken offline in Chillicothe, Texas, due to the fact that the helium supply had been exhausted at that site.

HABAA recognized a broken helium refinement paradigm that did not even represent or accommodate a third of their customer base. HABAA's Nitrotec helium refinement capability produces gas as an end product, and could potentially lower end user costs dramatically. HABAA's Nitrotec unit will be able to maximize the depletion of the helium reserve. The lower pressures and smaller gas requirements necessary to remain profitable for a Nitrotec unit will allow continued operation long after current refiners have been forced to shut down due to operational economic considerations.

In March of 2008, we purchased a non-allotted volume of raw helium from the BLM and were denied tolling by all current refiners without any real discussion, or even having them extend the courtesy of placing a price on the table. Then HABAA went directly to the BLM with our request to become a refiner on the pipeline, which was summarily denied without any hearing or due process. Since mid-2007, we have attempted various ways to access the BLM pipeline via direct contact and consultants. All have ended without success.

There are many, but I want to highlight some key problems to the current system.

The loss of American jobs. In 2009, HABAA had 5 consecutive years of 28-plus percent growth and 175 employees. Now, as a result of the domestic helium market, I have less than 20.

Monopolistic helium pricing. Because the control of our Nation's helium is bottlenecked by three refiners, it allows those refineries to have full control over supplies, and ultimately drive pricing. These refiners transact with subsidiaries to turn a cylinder that cost $25 via the BLM transaction into a market cost to me of $900. This is a markup of more than 3,500 percent. Tolling does not work, because refiners have no incentive to allow competition.

No helium gas refinement on the BLM pipeline. As I indicated in greater detail within my written testimony, the BLM has not supported businesses that need helium gas, even though these businesses represent a third of the helium needs. I attempted to cite a small refinery on the BLM which ignored my request.

Market chaos is everywhere. For example, the average cost of wholesale helium has tripled, yet the price continues to move upward monthly. We have made thousands of phone calls, emails, and other contacts looking for helium for our customers. Refiner distributors are buying small, struggling distributor companies and trying to drive competition out of the market. In the past few months we have documented more than 50 cases. For example, the refiner-distributor recently took a large chain customer we had under contract. The refiner-distributor had access to the supplies, and we were unable to service the account, even though it was under contract.

Thank you for your kind attention and the opportunity to present this testimony. Happy Valentine's Day to you and to all you love.

[The prepared statement of Mr. Page follows:]

Statement of Gary W. Page, President, Helium & Balloons Across America

Mr. Chairman, Members of the Committee, thank you for the opportunity to testify today on the Responsible Helium Administration and Stewardship Act. Sir Isaac Newton said, "What goes up, must come down." Clearly, he was not following the current domestic helium market.

My name is Gary Page and my company, proudly based on Christian principles, Helium & Balloons Across America (HABAA) in Charlotte, NC, started in my home and has been servicing our customers for over 32 years with balloons and helium. HABAA began helium distribution regionally in the Southeast and amassed ~8,000 helium cylinders; a super jumbo tube trailer purchasing ~200,000 cu. ft. of helium at a time; a cylinder fill station; a fleet of delivery trucks and tractor trailers; and in-store service personnel. When we secured a national chain (i.e. Kmart), or a set of stores with a large footprint, we solicited partnerships locally for helium distribution and handled orders centrally through HABAA for better customer service and accountability of cylinder assets—mostly under supply agreement contracts. Eventually, HABAA was distributing helium across the continental USA including Hawaii, Alaska, and Canada internationally.

Helium & Balloons Across America (HABAA) is the "face" of small businesses across the country. It is at the core of what the "Responsible Helium Administration and Stewardship Act" is all about, though literally hundreds of other business from diversely different industries could be providing testimony before the House Committee on Natural Resources today. Most of those businesses do not have the clout of the current refiners—who dominate the market with the help of the current system. Entrepreneurs such as me are truly "small businesses" who create jobs, but are unable to come to Washington to make their case. I hope my perspectives add some context from the real pain end users feel as a result of the current structure.

I want to commend the Committee leadership for coming together, on a bipartisan basis, to address the systemic issues that exist within our domestic helium production and distribution markets. The bipartisan feeling in this room is buoyed by the fact that today is Valentine's Day and coincidentally February 14th is also the largest retail balloon sales day of the year. However, as I testify today, hundreds of my best customers are either without any helium, or have received a ration that will not allow them to meet the demands of the day. This is the second year in a row and I hope, with the passage of H.R. 527, the last.

I am here before you today as a businessman who has tried to buy volumes of helium via the auction process, but was unable to receive my helium for lack of access to infrastructure. When I purchased the technology needed to access volumes directly, I was blocked by the Bureau of Land Management (BLM) from gaining access to the pipelines they oversee. I have tried to follow the processes to allow open access and competition that are supposed to exist today, but found those processes in practice to be little more than theoretical.

The market has become so tight for helium that HABAA has two employees who are largely dedicated to searching for helium supply and managing our vendor relationships. We have hundreds of customers who have been waiting for up to a year for a delivery of a single helium cylinder—with no real prospect that they will be serviced. Before this shortage, a typical delivery would take a few days. HABAA has grown from 3 vendor partners to over 93 with several hundred more vendors waiting for helium to begin servicing our customers. We have made thousands of phone calls, emails, and other contacts looking for helium for our customers. Even a company as large as Airgas can geographically help HABAA in less than 16% of their service area—in all other areas there is no reliable helium supply.

HABAA was growing at a rate of ~28% compounded year over year for about five consecutive years. We were forced into a second warehouse, which kept growing in size, and finally placed HABAA in a position of an aggressive consolidation and building program plan—we had ~75 full-time employees and ~100 part-time employees. HABAA occupies a unique position in the balloon industry as the hinge between balloon manufacturers and suppliers; new and unique proprietary marketing programs (i.e. Scan Based Trading = SBT); program implementation and management with retail chains; and the supply, distribution, and "back office control" of helium needed to drive this business.

In 2006 there were shortages of helium and prices spiked dramatically every few months. There seemed to be less product available to some customers than to others—even with contractual agreements, forced majeure or invoked allocations. Upon further investigation, it was my conviction that there was plenty of helium, but that the refiners had made business decisions to sell their product for higher profits, usually overseas. I found some older proven technology for the refinement of helium called Nitrotec, and purchased a system which was being taken offline in Chil-

licothe, TX, due to the fact that the helium supply had been exhausted at that site (please see an attached diagram of facility and system process).

HABAA recognized a "broken" helium refinement paradigm that did not even represent or accommodate a third of their customer base. In 2007, we realized that we needed to process our own helium gas to meet our own demands and those of our customers. In the summer of 2008, I purchased a Nitrotec portable refinery that has a current market value of approximately $4 million. We made a huge capital risk for a small business and purchased helium refinement equipment when we purchased the Nitrotec. This acquired capability was necessary so that HABAA could be taken seriously and with the hope we could compete for federal helium and receive needed access to helium gas in order to sustain our business and support the larger industry.

HABAA's Nitrotec helium refinement capability produces gas as an end product and could potentially lower end user cost dramatically. As important as serving the existing refining needs for gasified helium demand, the HABAA's Nitrotec unit will be able to maximize the depletion of the helium reserve. The lower pressure and smaller gas requirements (3 MM cu. ft. day) necessary to remain profitable for a Nitrotec unit will allow continued operations long after current refiners have been forced to shut down due to operational economic considerations. This will allow increased utilization of this important natural resource and ensure that the public maximizes the development of this resource. The Committee's measure, the "Responsible Helium Administration and Stewardship Act", creates an environment that both allows competition and will ensure the helium reserve is maximized.

In March of 2008, we purchased a non-allotted volume of raw helium from the BLM and were denied tolling by all current refiners, without any real discussion or even having them extend the courtesy of placing a price on the table. Then HABAA went directly to the BLM with our request to become a refiner on the pipeline, which was summarily denied without any hearing or due process. Our email, protesting the nonsensical notion that the BLM would accept money for helium which had no realistic opportunity to ever be delivered to us, was never responded to by the BLM. Since mid-2007, we have attempted various ways to access the BLM pipeline via direct contact and consultants. All have ended without success, but we have great hope with the access provisions included within H.R. 527.

I want to highlight seven problems with the current system:

1. **THE LOSS OF MANY AMERICAN JOBS**: Elimination of the balloon industry will cause the loss of significant jobs—the International Balloon Association estimates that hundreds of thousands of jobs are impacted by helium supply issues. HABAA's current staffing of only ~10% of the employees which were employed by our company when this disaster began is a testament to this fact. There will be a significant economic impact as balloon manufacturing plants are forced to close as well as commerce from associated industries. Sales and marketing, display manufacturers, ribbon and balloon weight manufacturers, sticks and cup manufacturers, regulator and safety equipment manufacturers, cylinder manufacturers, store service and set-up crews, industrial gas suppliers, accounting, customer service, technology support, and other back-office functions will all be affected as industry infrastructure crumbles to maintain profitability for diminishing sales. Thousands upon thousands of retailers (party stores, grocery stores, dollar stores, card stores, drug stores, discount chains, and small gift shops) all rely on the income produced by the sale of balloons. There are full-time staff positions which are totally (or partially) supported by this single source of retail sales. A balloon manufacturer estimated that at any given time, 20% to 25% of retailers are totally out of helium without knowing when they will be in stock.
2. **OUTRAGEOUS AND UNFAIR "MONOPOLY" HELIUM MARKET PRICING**: Because the control of our nation's helium is bottlenecked by three refiners, it allows those refineries to have full control over supplies and ultimately drive pricing. These refineries can transact with subsidiaries and add cost during each internal transaction that far exceeds value. For example, one refiner and distributor of BLM helium pays $24.44 for the amount of helium required to fill one 291 cu. ft. cylinders (equivalent to ~$.04 per 18″ foil balloon), using current BLM 2013 pricing of $84 per Mcf. In this example, this refiner then sells that cylinder to a distributer like me for $873. This is a markup at an unbelievable 3,572%! That price was for the helium only; it did not include the distribution costs of $30.96 ($5.95 haz mat + $4.01 fuel charge + $21.00 delivery) or the $52.98 taxes, which bring the total to $956.94 ($2.13 of helium cost per foil balloon). Those are my costs that then have to be marked up to my customers in order to stay in business. Quite simply, because there is limited to no competition in the refining market, the public and small business suffers.

3. **TOLLING DOES NOT WORK**: The current framework, and some prior legislative proposals, holds the noble goal of allowing companies who did not have access to the BLM pipeline the ability to purchase helium and receive it via one of the existing access points (refineries). This ended up being a good theory, but is not practical. Refiners who have complete control of the supply can and routinely prevent access by merely refusing to refine raw helium after it has been purchased directly. In fact, the refiners we reached out to would not even quote us a price for tolling. This inequity in the system is what drove me to make the capital purchase of the Nitrotec, as I was operating under the belief that I could secure the 6% set aside that is mandated by the law. Unfortunately, the current framework does not force the set aside to function as it was intended. Efforts to prod the BLM to change the way these set asides function are daunting for even large operations such as mine and why the changes within H.R. 527 are so important in their effort to ensure competition.
4. **NO HELIUM GAS REFINEMENT ON THE BLM PIPELINE**: The BLM has not supported businesses that need helium gas and not liquefied helium which creates additional capital costs to pay for purity and a product form which is not wanted nor useful in these applications. Helium gas is the "natural state" of helium found in nature; it requires huge capital investment to make it pure and cold enough to become a liquid, and consumers are saddled with that unnecessary cost. And even though two-thirds of helium is utilized in the liquid state (pressure/purge-NASA and DOD; superconductivity/cryogenics—MRI; controlled atmosphere-fiber optic and chip manufacturing), a third of current uses are for helium gas (leak detection; breathing mixtures—deep sea diving and hospital use; welding; heat transfer; chromatography; lifting), and should have their own reliable supply source through the BLM.
5. **MARKET CHAOS IS EVERYWHERE**: End users in every state are impacted by the current helium refinery monopoly. As an example, Airgas has been excluded from the BLM process. They are the largest distribution outlet and depended upon for meeting helium needs of American industries and consumers, but are not stakeholders of the refining process. Two of what was the then three refiners, Air Products and BOC, sold their packaged gas businesses to Airgas, so they must have recognized that Airgas could "do" distribution better. However, some of those same forces have crippled Airgas during this helium supply crisis hurting many U.S. businesses and the national economy. Some points to highlight a few of the market issues:
   i. For example, the average cost of wholesale helium has tripled, yet the price continues to move upward monthly. Other related costs, that have nothing to do with the price of helium, such as cylinder rental, have also approached tripling as vendors attempt to offset lower gas sales with increased costs elsewhere. For example, 18 months ago, a helium cylinder which cost HABAA less than $60 wholesale now averages ~$150 and the cost is going up every month. These costs are before the 30% price increase has been factored in, which was announced in late December and went into effect January 1, 2013 by both Praxair and Air Products—the 2 largest refiners on the BLM system.
   ii. We have made thousands of phone calls, emails, and other contacts looking for helium for our customers. Airgas can geographically help HABAA in less than 16% of their service area—in all other areas there is no reliable helium supply. Praxair, Airgas, and Matheson are buying small struggling distribution companies, damaged by the helium shortage, then giving HABAA notice that they will no longer be providing helium to our customers in these areas. This has occurred twice this week alone with Praxair, but has occurred 51 times in the past three months. For a reference point, the normal volume of such consolidation/acquisitions has historically been closer to a couple each quarter.
   iii. There is an unprecedented push toward consolidation, as a number of small businesses are being sold or approached for purchase for pennies on the dollar by the major players. This is due to their precarious business position or weak balance sheet, which is forcing them out of business. This consolidation disadvantages others in the market. For example, a refiner/distributor recently took a large chain customer we had under contract. The refiner/distributor had access to supplies and we were unable to service the account. The refinery monopoly has downstream competitive consequences—it is not simply limited to supply issues at the loading docks of the three refiners. HABAA has lost several thousand customers in addition to the chain referenced above. As a result, we have outsourced everything we can, sold

many of our hard assets (cylinders, tube trailer, etc.) to Airgas, and are now down to ~10% of our employees since 2009.

6. **THE BLM HAS BEEN COMPLICIT IN PERPETUATING THESE INEQUITIES BY BLOCKING ACCESS TO OTHER POTENTIAL REFINERS**: As mentioned above, the BLM has developed a cozy relationship with these refiners and refused to manage helium sales as far back as 1996. This relationship has been described by the Office of Inspector General as "less-than-arms-length" and "we found overcharging, possible double-billing, costly short-term financing, and unjustified allocation of equipment costs," and "weaknesses that leave the Government vulnerable to fraud, mismanagement, and potentially large monetary losses." More recently, in November 2012, an audit by the Office of Inspector General issued a scathing report which charged the BLM "to prepare and implement comprehensive procedures for managing its helium sales to nongovernmental buyers."
7. **EXPORTING VERSUS DOMESTIC NEEDS FOR HELIUM RESOURCES**: While I recognize that exporting commodities in times of low pricing could be in the government's best interest, helium's prices are excessively high (to the point of damaging the U.S. economy) and helium supply is not currently abundant. Over nearly the past two years, helium supplies have dried up, and I believe that it is because there is effectively a helium refining monopoly which has taken the taxpayers' resources to higher profits overseas, while sticking the rest of the American business community with dramatically higher costs for their helium due to a manufactured shortage.

In an effort to address the current issues of domestic availability of helium for the thousands of companies that comprise the balloon industry, I suggest the following:

1. Provide a distinction between end users who need refined liquid helium versus those who just need refined helium gas. There is a huge cost differential and current industrial companies have no interest in providing anything but liquid helium. This could potentially lower end user cost dramatically and improve availability to underserviced industries.
2. Ensure access to the BLM pipeline for small facilities, such as a Nitrotec unit. Competition will be enhanced with greater refining capacity and small facilities will maximize the depletion of the helium reserve and benefit to the taxpayers. The lower pressure and smaller gas requirements (3 MM cu. ft. day) necessary to remain profitable will allow continued operations long after all other refiners have been forced to shut down due to operational and economic considerations. This is why Nitrotec's technology was developed—to refine helium at the source for sale, rather than discarding it, and then move the plant to another source. Helium does not need to be a financial black hole, and some activities are appropriate for government to tackle until private industry can prove adequacy to stand in the gap.
3. The Committee should consider expanding the current BLM pipeline in a westerly direction and repopulate the Cliffside Storage Field. In 2010, a National Academy of Sciences study concluded that the 1996 Privatization Act had adversely affected critical users of helium and that selling off the supply, as required, was not in the best interest of U.S. taxpayers or the Nation. Because of the strategic importance of helium to America (the reason the BLM pipeline system was developed in the first place), the Federal Government should consider those voices on the National Research Council of the National Academies (authors of "Selling the Nation's Helium Reserve"). What was true then is true now—storage is the major issue, as helium is a "waste by-product" of the quest for hydrocarbons, and this resource will be lost because it cannot be stored physically and economically.
4. Stability to the federal program could allow for private capital to enter the market. It is a new concept and now conceivable that private companies could actively pursue drilling rights for helium wells on federal public lands and not just viewing helium as a byproduct in traditional drilling operations.
5. While I am for free trade and recognize that not all commodities should be treated equally with respect to export, many of the issues with availability and price of our domestic helium can be traced back to supply. If private companies find the helium, store it, refine it, and distribute it, there should be no restrictions as to where it goes, but volumes from the BLM system should be focused upon meeting domestic needs. Currently, there is not a shortage of helium, but rather a shortage of helium refinement capacity and competition in the American helium marketplace due to a lack of access. If one adds up the total helium domestic needs from all sources (MRI's and medical needs, manufacturing of fiber optics, computer chips, plasma TV's, welding, leak detection, sci-

entific research, and yes, even balloons), it would require ~2.4 billion cubic feet a year. The BLM pipeline system refines ~2.1 billion cubic feet a year and all other sources, including EXXON in Wyoming produces another ~2.7 billion cubic feet of refined capacity for a net total of ~4.8 billion cubic feet. This is according to an independent consulting firm, RMW Solutions, LLC. This group is made up largely of ex-Air Products helium experts including Ben Reinoehl, a principal at RMW and a member of the National Research Council who wrote part of "Selling the Nation's Helium Reserve." The Congress has relied on this book to make decisions related to the national helium reserves. RMW has collected this data from BLM governmental and industry sources.

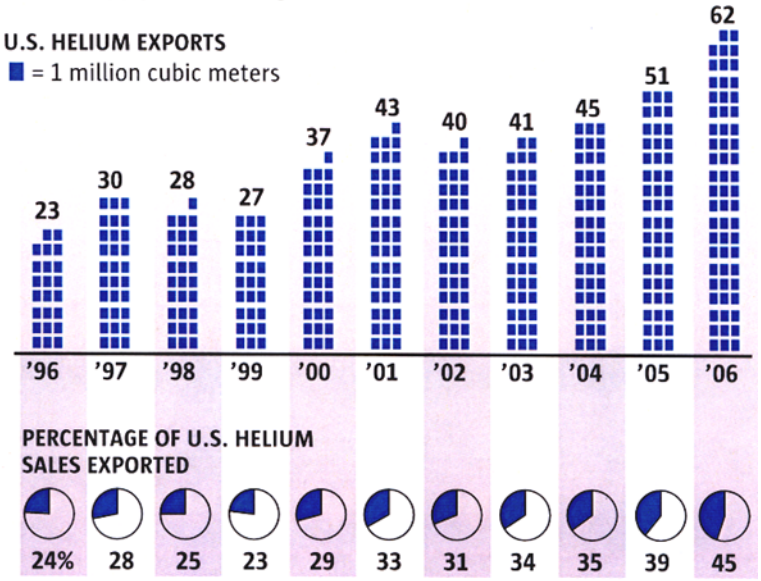
6. With the sale of BOC's packaged gas business (cylinder distribution), the Federal Government required the divestiture of refinement capabilities to a third party rather than bundling it to Airgas. This did not prevent a monopoly but effectively perpetuated one. Future decisions should take into consideration the larger market picture of creating more competition.

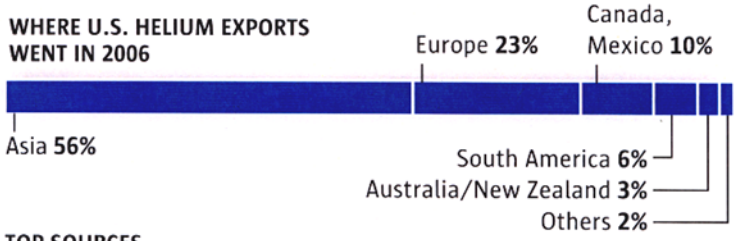
In closing, I want to thank the Committee for the opportunity to testify today on behalf of the small business end users who are dependent upon federal helium policies. I hope that my perspectives, as an entrepreneurial businessman, are of value to the Committee. Please know that I stand ready to assist your efforts and hope that Congress works in the same bipartisan manner the Committee has started with the introduction of H.R. 527, the Responsible Helium Administration and Stewardship Act. The current authorization for the helium reserve expires at the end of this fiscal year and it is critical that legislation move quickly through the process in order to be completed before October.

Thank you for your kind attention and the opportunity to present this testimony! Happy Valentine's Day to you, and to all those you love.

A shrinking helium stockpile

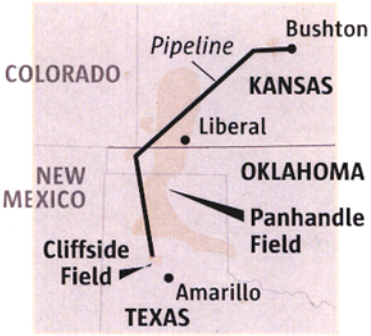
The United States is the world's leading source of helium but its supply is declining.





TOP SOURCES

Natural-gas fields where helium is found; Cliffside Field has one-third of the world's supply

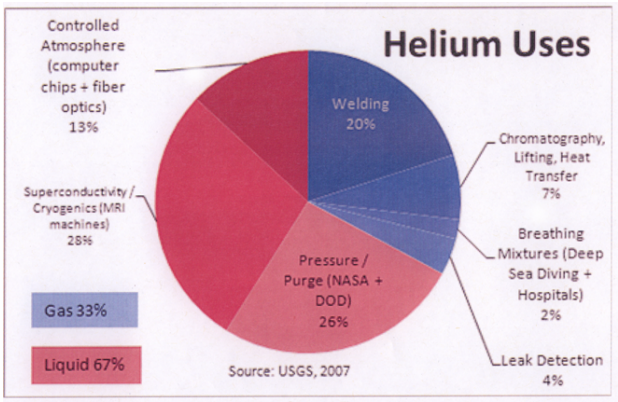


TOP USES

- For launching space shuttles
- To toughen industrial welds of metals, such as gold, copper
- Coolant for magnetic resonance imaging machines
- To create optical fibers for telecommunications cables

Source: Norbert Pacheco, team leader for helium evaluation and analysis at the U.S. Bureau of Land Management; U.S. Geological Survey Minerals Yearbooks; Praxair Technology

McCLATCHY-TRIBUNE



Response to questions submitted for the record by Gary W. Page, President, Helium & Balloons Across America

Questions from Chairman Doc Hastings

1. Mr. Page, in your testimony you say that in March of 2008, you purchased a non allotted volume of crude helium from BLM and no refiner would toll for you, nor were you permitted to hook up to the pipeline to procure your helium. Can you further elaborate on this situation?

a. To be clear, you put out a request for one of the four refiners to toll for you and you received zero responses? Were you given a reason for this?

- Actually, Helium & Balloons Across America (HABAA) contacted ALL refiners who were on the pipeline and received NO CONSIDERATION from any of them. Even though we had helium to toll and tried to schedule a meeting to discuss, no refiner was willing to enter into any meaningful conversation, but summarily blew us off without quoting a price or giving us hope for future cooperation (see attachment). I believe that the common thread was that they did not have "capacity for tolling"—certainly something HABAA could not refute.

b. You say that you were denied the ability to procure your helium by the BLM can you explain how that happened?

- HABAA paid our fees and went through the acceptance procedure to be able to bid on a non-allotted supply of crude helium through the BLM. Because we were unable to access our helium through the tolling procedure outlined by statute, HABAA went back to the BLM to petition for direct access to our helium by refining it ourselves with the Nitrotec helium refinement capacity we had purchased. The law seems clear that there is a 6% set aside which we had gone through the government procedure to secure, and to block access goes against the grain of the intent of the law. HABAA was not requesting any "special consideration," only that we have access to the set-aside that was created for companies such as ours. HABAA's COO, Jim Redmon, was petitioning through Leslie Theiss and John Hamak to allow us to secure our helium investment. This was to no avail, as they blocked our efforts to secure our helium saying that "there was no additional helium supplies to be secured," which seemed nonsensical considering the set-aside. HABAA was only left with the option to store our helium for a fee for some indefinite amount of time, without any clear prospect of ever taking delivery. This offer was met with a stern letter of protest from HABAA (attached), which was NEVER acknowledged or responded to by the BLM.

c. You say that since 2007 you attempted various ways to access the BLM pipeline. What various ways did you attempt to access the pipeline?

- HABAA went through direct contacts with Leslie Theiss and John Hamak, which have been outlined above. In addition, HABAA secured the services of RMW Solutions and the principal J. Benjamin Reinoehl, who are retired executives with Air Products. Ben was a contributing author of "Selling the Nation's Helium Reserve," which the Federal Government has used extensively to deter-

mine helium policy since the 1996 Privatization Act. Ben knows BLM personnel and current refiners intimately, and has been a key player in setting up the current BLM structure. Ben was able to get agreement from the BLM for HABAA to place our Nitrotec helium refinement unit on the pipeline, but received flat denials that we would be awarded any crude helium to operate our plant—effectively killing the project.

d. What happened to the helium you had purchased?

- Due to the fact that all options had been stripped from HABAA (no tolling agreement; could not establish our plant to process our crude helium ourselves; refusal of the BLM to make crude helium available to us if we did set up a refinery; and HABAA's unwillingness to pay for crude helium storage with dubious prospects that it would ever be delivered) convinced us to pull the plug on continuing with this strategy. Interestingly enough, a legislative change to the law seemed to be the only remaining viable option for HABAA to succeed with our Nitrotec investment.

2. Mr. Page, in your testimony you say you hope the access provisions in H.R. 527 will help solve some of the problems you have had accessing your helium from the BLM. Can you tell the Committee some of the specific provisions that will help reach your goal of buying and procuring helium?

- Opening up access to additional players other than the current helium refinement "monopoly" is a huge step. Competition is key in solving problems of out-of-control prices and unreliable sources of supply. Creating an auction for meaningful volumes of BLM helium reserves will open up the process to free-markets to move without restraint. Accountability and opening up disclosures will help to clear the "smoke-filled" room in which the refiners and BLM have been operating. It has been our belief, based on our experiences, that the BLM was running interference for the helium refinement monopoly on the pipeline rather than using their authority to equitably administer the set-aside provision that was legislated by Congress. There is no question that the BLM has been complicit in perpetuating these inequities and that charges leveled by the Office of Inspector General are evidence of this cozy relationship and must be taken seriously and acted upon going forward if they are to continue having the fiduciary responsibility for this valuable natural resource (see enclosures).

Questions from Rep. Edward J. Markey

1. Mr. Morgan, Mr. Boerson, Mr. Page, Dr. Aronson: At current drawdown rates, in 5 to 8 years, the helium in the BLM Reserve is anticipated to be largely depleted. Should Congress consider steps to provide for a long-term helium stockpile? If so, what steps do you believe Congress should take?

- This is an important and critical question to be asking and has many implications to the role of government and strategic planning for our nation in regard to critical natural resources and their stewardship. It is my conviction that Congress missed the mark in the 1996 Privatization Act in regard to helium policy, as it is not in the best interest of the U.S. taxpayer or the Nation. Because of the strategic importance of helium to America (something which is growing yearly as a result of cutting edge research), domestic policy should be the reverse of a "depletion strategy." What was true nearly 100 years ago is still true today: storage is the major issue in a stable helium supply for America, since helium is a "waste by-product" of the quest for hydrocarbons, and this resource will be lost (vented to the atmosphere) because it cannot be stored physically and economically. The Cliffside Storage Field is a national treasure, as much as the giant redwoods of the Pacific Northwest, the Grand Canyon, or Yellowstone, and should be preserved and used to benefit future generations!

  The BLM pipeline should be expanded in a westward direction to encompass the "new" helium discoveries in Arizona and New Mexico. This is not just my opinion but also some voices on the National Research Council of the National Academies (authors of "Selling the Nation's Helium Reserve"). Many helium sources would love to sell their "waste helium" to the government, as they did decades ago—which built this world dominating resource. This does not need to be a "black hole for dollars" since market pricing could reflect an immediate payback to these investments for the Federal Government. No one would argue that the taxpayer and America are infinitely more enriched due to the Federal investment in the Eisenhower interstate highway system!

The second fallacy of the 1996 policy is that private companies would have an interest in picking up the slack and developing the next generation of helium exploration, discovery, storage, refinement, and distribution. All current refiners on the BLM pipeline are interested in refining and distribution, but have NO INTEREST in the real critical aspects of perpetuating the National helium supply. If you think I am incorrect about this, please take a look at the prospectus from Air Products, Praxair, and Linde and see where they have invested their treasure.

It is not too late to change course to prevent the inevitable from happening—America's dependence on foreign supplies of helium and greatly increased prices and availability at the whim of outside countries who are antagonistic if not considered enemies of the USA! When we do not develop our own resources in our own national interest, this is what we should expect will happen. Look at the tremendous transfer of wealth for oil the United States pays to unstable countries, and consider how those dollars finance anti-American sentiment and violence around the globe. We should have learned our lesson!

THE CHAIRMAN. Thank you very much for that. I guess that is worth 48 seconds.

[Laughter.]

THE CHAIRMAN. And certainly last, but not least on the panel, Dr. Sam Aronson, Vice President of APS Physics. Dr. Aronson, you are recognized for 5 minutes.

STATEMENT OF DR. SAM ARONSON, VICE PRESIDENT, THE AMERICAN PHYSICAL SOCIETY (APS)

Dr. ARONSON. Chairman Hastings, thank you. And thanks to the Committee for this opportunity to testify today regarding the critical nature of helium for the research enterprise in this country.

I am the former director of Brookhaven National Laboratory, one of the DOE national labs. I will be speaking about the impact on them, but more broadly on the impact on the 50,000 physicists and academia and industry, national labs, and so on that are represented by the American Physical Society.

In 2010, the National Research Council released a report which outlined a number of issues that have come about as a result of the 1996 Privatization Act. Principal among those has been the impact of the Act on Federal users and researchers that rely on Federal grant programs. Those are the constituents I want to focus on today.

In 1995, the Council of the American Physical Society issued a statement about helium, concluding that "in view of the importance of this unique and irreplaceable natural resource in modern science and technology, the American Physical Society urges that measures be adopted that will both conserve and enhance the Nation's helium reserves. Failure to do so would not only be wasteful, but would be economically and technologically shortsighted.

And I commend the Committee for its work on this important issue.

Because of its unique properties, helium is used in a broad range of scientific research in both small and large-scale facilities and experiments. These include its uses for super-conducting magnets and radio frequency power systems, for vacuum systems and measurements of nuclear magnetic resonance, which is the basis for MRI, research in nano-technologies, and many other applications.

At Brookhaven and other large labs, helium is used to cool superconducting equipment for accelerators, particle detectors, and re-

search magnets. It is also used to operate measurement and diagnostic equipment.

The acquisition of extremely weak signals in the data of several different disciplines relies on helium-cooled detectors to reduce electronic noise and thermal noise. These detectors have not only research applications, but they have national security applications, as well.

Given the applications and the properties of helium, there is, for most of these, simply no other substance that can serve as a refrigerant to achieve the temperatures near absolute zero that these devices need. This means that if researchers cannot obtain helium due to supply or pricing constraints, their experiments shut down. In superconductivity applications such as in cooling magnets and accelerators, only helium can act as the adequate refrigerant for large-scale systems like accelerators. Therefore, if helium is unavailable to replenish a system, those also would shut down.

Recent discussions with both large and small-scale research projects at Brookhaven have reminded me that the reliability of the supply is often as important as the volatility and the price of helium.

The 1996 Privatization Act established a Federal in-kind program designed to give preferred access to Federal users. The initial focus was on those Federal users with a major requirement of helium. Regulations were subsequently promulgated and contracts signed with what became authorized Federal helium suppliers. And one of the features of those contracts required those suppliers to provide a priority to Federal users.

While smaller Federal users were not required to use the in-kind program, according to the BLM nothing precluded them from doing so. And in 2010, in the National Academy's report referred to earlier, there was a recommendation that, given the extreme price fluctuations and supply shocks over the last 10 years or more, small researchers reliant on Federal grants should be able to participate in the in-kind program.

I also note, as Mr. Holt mentioned earlier, that a number of the national labs are currently receiving something on the order of two-thirds of their normal supply of helium, due to allocations. This requires reprioritization of projects, and some things just don't get done.

H.R. 527 provides a provision that authorizes the in-kind program, and ties the price being offered under the in-kind program to the minimum auction price. I would encourage the Committee to more closely examine the operation of this program, and specifically to ensure that small, Federal grantees are explicitly eligible.

And finally, just a word about the medium and long-term availability. We all know that this is a finite resource, and so I would like to see the Committee in the future consider the extension of the supply of helium that is available, because we will run out.

And with that, I would like to terminate my remarks and thank the Committee and answer any questions you might have.

[The prepared statement of Dr. Aronson follows:]

Statement of Dr. Samuel Aronson, Former Director, Brookhaven National Laboratory, Vice President, The American Physical Society

Chairman Hastings, Ranking Member Markey, distinguished members of the Committee:

My name is Samuel Aronson, and I am the former director of the Brookhaven National Laboratory, part of the Department of Energy National Laboratory complex. Today, I am representing the American Physical Society as its recently-elected Vice President. The APS is a non-profit membership organization working to advance and diffuse the knowledge of physics through its outstanding research journals, scientific meetings, and education, outreach, advocacy and international activities. APS represents over 50,000 members, including physicists in academia, national laboratories and industry in the United States and throughout the world.

Thank you for providing me the opportunity to speak to you today about one of our nation's most critical resources, helium.

In 2010, the National Research Council and National Material National Materials Advisory Board released a report which examined the impact of the 1996 Helium Privatization Act. Principal among those has been the impact of the act on federal users and researchers who rely on federal grant programs. It is about these users that I wish to focus my comments.

But first, I would like to briefly discuss the properties of helium. Helium is extremely unique, even among other elements. It occurs at a fraction of a percent in natural gas, and it is only economic to recover helium from deposits where its concentration is 0.25% or greater. It is very rare in the atmosphere, making recovery from air extremely expensive. It is unlikely that other economically viable sources of helium will ever be discovered. Natural gas is extracted from reservoirs at a rapidly increasing rate and, as a result, much of the Earth's endowment of helium is being rapidly depleted. Conservation and efficiency in obtaining helium is therefore critical.

In 1995, the Council of the American Physical Society issued a statement about helium, concluding that "In view of the importance of this unique and irreplaceable natural resource to modern science and technology, The American Physical Society urges that measures be adopted that will both conserve and enhance the nation's helium reserves. Failure to do so would not only be wasteful, but would be economically and technologically short-sighted."

I commend the Committee for working to address this important issue.

Turning to scientific applications, helium is used in a broad range of research, in small and large scale facilities and experiments. Its unique properties make it irreplaceable for superconducting magnets and radio frequency power systems, vacuum systems, measurements of nuclear magnetic resonance, research in nanotechnologies and many other cryogenic applications.

At Brookhaven and other large scale labs, helium is used to cool superconducting equipment for accelerators, particle detectors, and research magnets. It is also used for research magnets and to operate measurement and diagnostic measurement. Devices used in astronomy and astrophysics studies also depend critically on liquid helium. The acquisition of extremely weak signals in several disciplines relies on helium-cooled detectors to reduce thermal and electrical noise. These detectors are also used for national defense needs, such as for detecting submarines by the military.

There is no other substance other than helium that can be used as a refrigerant to achieve temperatures from 4.2 K above absolute zero down to millikelvins (thousands of a kelvin). If researchers cannot obtain helium due to supply or pricing constraints, they must shut down their experiments. Light sources and accelerators which depend upon liquid helium must shut down if supplies are inadequate or too costly.

During my tenure as Brookhaven director, we confronted such a shortfall. During the 2011 operations of our large particle accelerator, the Relativistic Heavy Ion Collider, an electrical failure caused the shutdown of our liquid helium (LHe) refrigerator and the loss of several thousand gallons of helium. The restart of the accelerator had to be postponed due to delivery problems. The loss of research productivity was minimized by an extremely cooperative vendor and our own scrounging for small amounts of helium from other researchers on site, but weeks of valuable data were not produced. Recent discussions with both large and small research projects at Brookhaven show that reliability of supply is more often the problem than the volatility of the price of helium.

The 1996 Helium Privatization Act established the federal In-Kind program designed to give preferential access to federal users. The initial focus was on those Federal users with a 'major' requirement of helium. The Bureau of Land Manage-

ment then lowered the bar on what constituted a major requirement of helium. BLM signed contracts with 'authorized federal helium suppliers' requiring them to make Federal users a priority. While the smaller Federal users were not required to use the In Kind program, according to the BLM, nothing precluded them from doing so.

It is unclear that small researchers are sufficiently aware of their ability to use the in-kind program. Given the extreme price fluctuations and supply shocks over the last ten or more years that have buffeted small researchers reliant upon federal grants, the 2010 National Research Council report recommended that such users be able to participate in the federal in-kind program. The report also recommended that the "in-kind program and its associated customer priorities should be extended by the BLM, in cooperation with the main federal agencies not currently participating in the in-kind program—for example, the National Science Foundation, the National Institutes of Health, and the extramural grant programs of the Department of Energy—to research being funded in whole or in part by government grants."

Despite the National Research Council recommendation, small researchers reliant on federal research grants continue to be subject to severe supply constraints and price shocks which their research grants cannot accommodate. They are being forced to either shut down experiments, invest in expensive recycle equipment using their own resources, or, according to one nanotechnology researcher, switch to room temperature experiments to continue their work, in less-than-optimal conditions.

I also note that some large federal users are having their allocations cut back. Argonne National Laboratory is currently receiving only 70% of its allocation from its supplier. Oak Ridge National laboratory currently receives only 60% of its allocation. Sandia National Lab often receives delayed or short orders. As a result, the laboratories have had to reprioritize some of their projects. Federal users who are supposed to receive priority access are not receiving that access.

H.R. 527 includes a provision that authorizes the In-Kind program and ties the price being offered under that program to the minimum auction price. I encourage the committee to more closely examine the operation of the In Kind program and, specifically, to ensure that small Federal grantees are explicitly eligible for such priority access and pricing.

Finally, I wish to say a word about medium and long term helium availability. While your focus has been on addressing the near term issue of supply from the Federal reserve, medium and long-term supply issues should also be addressed sooner rather than later given that uses for helium are likely to increase, not decrease. Specifically, we believe it would make sense for the Department of Energy to examine the R&D opportunities to increase the efficiency of helium capture at the well-head or during liquefaction. Doing so would ensure that less helium escapes into the atmosphere during drilling.

I'd like to thank the committee for the opportunity to testify on this critical issue and look forward to addressing any questions you might have.

Mr. LAMBORN [presiding]. Thank you for being here, and for your remarks. Thank all of the panelists.

Now, before we go to questions from the Members, I would like to recognize Representative Labrador, who wanted to be here earlier because you have a constituent on the panel.

Mr. LABRADOR. Yes, thank you. Good morning.

Mr. LAMBORN. Representative.

Mr. LABRADOR. Thank you, Mr. Chairman, Ranking Member Markey, for convening this hearing today. I just want to welcome Rodney Morgan, who is the Vice President of Procurement at Micron Technology. Thank you for being here and testifying this morning.

Micron has a huge footprint in the State of Idaho and in the United States. They have become a global leader in computer memory technology with operations in Europe and Asia. Currently they employ more than 25,000 people. Half of their employees are here, in the United States. And actually, Micron is the only remaining U.S.-based memory producer.

Micron was founded in Boise, Idaho, as a semiconductor design consulting company. And by focusing on being a low-cost producer, Micron has survived the numerous collapses in the RAM market which caused many competitors to leave the industry. Micron eventually acquired the memory businesses of rivals Texas Instrument in 1988 and Toshiba in 2001. These acquisitions gave Micron an international presence with production facilities in Italy, Singapore, and Japan.

Helium, obviously, as you have already testified, is a critical component in the computer member industry, and Congress must act soon to ensure a reliable supply of helium that is available for American businesses.

I commend the Chairman for his work on this legislation, H.R. 527. It is a step in the right direction to helping companies like Micron receive a secure and continuous supply of helium. And I look forward to listening to the answers to the questions.

And thank you for being here today.

Mr. LAMBORN. Thank you, Representative. Now we will start with the questions, and I will begin.

For any of the panelists, each of your companies is heavily dependent on contracts between yourselves and distributors or refiners. As you know, there is much communication that goes on between the refiners and the BLM regarding maintenance schedules, temporary closures, and general management of the reserve.

Do you feel that your companies receive timely information concerning these communications and helium issues that are of importance to your business? And would transparency provisions that are contained in the legislation that require the timely posting of information on the Internet give assurance to your companies that you have the information that you need to make proper plans for your helium needs?

And this is for any one or more of you.

Dr. ARONSON. I have a comment regarding Brookhaven National Laboratory's arrangement with its vendor, which is Linde. We have had supply interruptions for our large superconducting accelerator in the recent past. These, I think, occurred further up in the supply chain than the arrangement between Linde and Brookhaven National Laboratory. And we have had very good success in working with the vendor to mitigate the effects of those kinds of supply interruptions.

I don't have personal knowledge as to whether there is adequate communication between Linde and further up the chain. But I know that it is working well from the vendor on down to the end user.

Mr. LAMBORN. OK, thank you. Any of you other gentlemen?

Mr. PAGE. I would say for our company the transparency in H.R. 527 is extremely important. We have a general view of when the BLM, for instance, would go down for maintenance, and the coordination with facilities in Wyoming. But it is not very concrete information. We don't really know exactly when it is going to go down, when it is going to come back up, what the issues are, and so on.

So, I think this would be a real plus——

Mr. LAMBORN. OK, thank you. Mr. Boersen?

Mr. BOERSEN. Yes, we agree. The transparency provision in this bill is absolutely critical. I will answer the question by briefly summarizing our experience last year.

So, in the middle of June of 2012 we were notified of a supply chain disruption and within 2 weeks were under force majeure, facing very stringent allocation measures that came close to—but we were able to avert—closing down part of the plant, including the layoffs that would have resulted from that.

So, we are very pleased with the Committee's work, particularly on the transparency provision. We believe that would have significantly ameliorated the problem last year and we may not have had to go to the lengths that we had, in terms of spending significantly increased money to import helium to continue our operations.

Mr. LAMBORN. Thank you. Mr. Morgan, did you have anything to add?

Mr. MORGAN. I would concur with Mr. Boersen. This last year has been a struggle for us to acquire helium. Understanding and transparency into the maintenance activities associated with the BLM and the operations there would be very helpful.

You know, as far as the transparency into pricing, we do pay market prices, regardless of what the difference is. So that is not as important as visible insight into the maintenance activities.

Mr. LAMBORN. OK, thank you. And for any one of you, what is the differential when you have to buy from foreign sources if there is some kind of domestic supply disruption?

Mr. MORGAN. Well, for Micron, we are a global company. And as Representative Labrador referred. And we have a connection into sources around the world and suppliers around the world that come from various countries that are out there already. So if there is a need to divert supply in order to support our operations, we work very closely with distributors to make that happen.

Mr. LAMBORN. Is it much more expensive, though, when you have to look to foreign sources?

Mr. MORGAN. In some cases, yes. Certainly in the case of Russia and the open market related to that country, it is very expensive. And the bidding process there really drives up the price.

Mr. LAMBORN. OK. Does anyone else have anything to add to that? Mr. Boersen?

Mr. BOERSEN. I would concur with Mr. Morgan. When we have had to import it from international sources, the cost is much, much higher than we are typically used to.

Mr. LAMBORN. OK, thank you. At this point I would like to recognize the gentleman from New Jersey, Mr. Holt.

Dr. HOLT. Thank you, Mr. Chairman. First, a quick question Dr. Aronson. Does the legislation, as proposed, do enough to ensure a supply for Federal labs, Federal contracts, Federal agencies, or should we pay more attention to that in the legislation?

Dr. ARONSON. From my understanding, it actually does. The issues that I raised in my testimony regarding the legislation are really surrounding issues having to do with access to the in-kind program for small-scale users of helium in research, and also looking beyond the legislation, namely at the supply going down the road——

Dr. HOLT. Yes, I will get to the supply in a minute. But what I wanted to find is whether we should have some priority access for certain kinds of users.

Dr. ARONSON. Well, I would hope that the priority access that Federal users and Federal grantees currently have, subject to the fluctuations that we discussed, would continue in the——

Dr. HOLT. OK, thank you. Mr. Page, you spoke about some of your association members being denied tolling by current refiners.

Mr. PAGE. Correct.

Dr. HOLT. Did I hear you correctly?

Mr. PAGE. That is correct.

Dr. HOLT. In this legislation, the Secretary would be given some authority to not only ensure transparency for those companies and those arrangements, but also to get tough with them, if necessary. Does the legislation, as you see it, and briefly, please, how do you see the Secretary using that authority? How might a Secretary use that authority? Is it sufficient?

Mr. PAGE. I am not certain that it is, just because there is no real incentive. They are actually putting themselves in more competition that is created when you have to toll. And I see that there are not any alternatives, or doesn't seem to be alternatives available now. But I am just not sure how that works.

Dr. HOLT. Twenty percent of the auction would be available to——

Mr. PAGE. Right.

Dr. HOLT [continuing]. Any kind of users, including recreational balloons——

Mr. PAGE. Right.

Dr. HOLT [continuing]. And so forth. But for that to work, it depends on refiners, the four primary refiners, I presume, being competitive enough to take the job.

Mr. PAGE. Correct.

Dr. HOLT. For the smaller purchasers, perhaps, or even not-so-small purchasers.

Mr. PAGE. Well, I——

Dr. HOLT. We would be happy to hear in follow-up from any of you of steps that we might take, other things we might build into the legislation that you think would help with that.

In the time remaining, though, I really want to get to the supply question. Dr. Aronson, I am really concerned that some critical uses will find themselves in short supply in the future, because we didn't foresee that. If you look at quantum computing, or large-scale superconducting, or other such things, do you see large demand that might pop up 5 years from now, 10 years from now, 20 years from now? And will market forces be sufficient to address that supply, that demand, to provide the supply for that demand?

Dr. ARONSON. One comment I can make is that technologies, new technologies coming from basic research, including technologies that could replace the need for liquid helium in cooling some processes, depending on liquid helium because most of the breakthrough technologies that we are looking at are dependent on highly complex materials whose structure isn't understood, and requires examination in research machines like light sources, which themselves depend on liquid helium.

So, of course, I can't tell you what the landscape of high-tech applications will be 20 years from now, but I am certain that the fundamental research that we are doing will be necessary to get us there. And that will continue to be dependent on liquid helium, because it is a scalable resource. That is, all different sorts and sizes of research projects can and do use it.

Dr. HOLT. Thank you, Mr. Chairman.

Mr. LAMBORN. All right, thank you. Representative Lummis of Wyoming.

Ms. LUMMIS. Well, thank you, Mr. Chairman. I would like to point out to Dr. Aronson that I have been very interested in your responses and to your testimony. I am the Chairman of the Energy Subcommittee on the Science, Space, and Technology Committee. So a lot of what you have been telling us about the basic research, as well as the applied research for substitutes for liquid helium or ways that additional research and R&D could benefit the applications or requirements of this scarce natural resource, is something that falls right in our wheelhouse. We would be very interested in working with you.

So, we are just putting together our agenda for the coming couple of years on that Committee. So if you would be so kind, please submit to us your recommendations and other scientists in the area that we should be consulting with regard to preparing our agenda as to research and development regarding these helium issues. And I would appreciate that very much.

Dr. ARONSON. I would be very pleased to do that. Thank you.

Ms. LUMMIS. Thanks very much. Let me get to my questions. Excuse me, Mr. Chairman. I was so excited about the science part, I set my questions aside.

Mr. LAMBORN. That is understandable.

[Laughter.]

Mr. LAMBORN. You could yield some time to the gentleman next to you and he could trade it back to you if you need a few more moments to prepare.

Ms. LUMMIS. I just found them. Thanks.

Mr. LAMBORN. OK.

Ms. LUMMIS. OK?

Mr. LAMBORN. Well, please proceed.

Ms. LUMMIS. This is for all of our guests here. In terms of meeting the supply demands in the companies you represent, how comfortable are you with the safeguards in this bill to ensure that the auction results in a stable supply? And that is for anyone.

Mr. MORGAN. As far as for Micron, the provisions, we feel, are relatively satisfactory. Our main focus is around the supply and enabling the operation to continue running. The three points that have been brought up and referenced by Mr. Boersen in relation to transparency, the transition period, I think, is critical to establish what those processes are that are going to be followed by the BLM. And then, of course, our main concern is a stable supply in the industry.

The provisions we find satisfactory to support those. It is a new system we are all going to have to adapt to and we will just take the steps necessary to do so.

Ms. LUMMIS. Are there any additional safety net provisions you would like to see in this bill, if you could? And that is for anyone.

Mr. BOERSEN. One comment. So in the bill today it includes the 1-year transition period. And it may be helpful to give the Secretary the leverage to, depending on the situation at the time, depending on how the auction process development by the BLM is going, any constraints in the marketplace or legislatively at the time, give the Secretary the flexibility to assure that we don't run into a second helium cliff, say, in the 14- or 15-year timeframe after the passage of the bill itself.

Ms. LUMMIS. OK. And——

Mr. PAGE. If I could just add on to that, I feel like that the refiners decide today who receives product and who does not. And what this bill does is it presents an entirely new paradigm. And under this bill I think there is a lot more accountability, in terms of how those resources are appropriated.

So, the work of this bill, I think, has reversed, I think, a system that does not work, that is broken.

Ms. LUMMIS. Well, thank you. Mr. Page, while I have you, although you are not maybe, the most important segment of helium users out there, you are the segment that most Americans learn about helium from in the first place.

Mr. PAGE. Right.

Ms. LUMMIS. So I have a question for you, specifically. What about price increases that you would pass on to customers as a result of an auction? Do you have a level of concern about that?

Mr. PAGE. I actually think the pricing will come down, based on——

Ms. LUMMIS. Oh, good.

Mr. PAGE [continuing]. What we are working with today. And the reason for that is that there is no rational connection between the pricing and the way the program is currently working. And there is no real explanation for it, outside the fact that some industries have been graced with helium, or more graced, and there has been decisions made by refiners that helium is a frivolous use, and this eliminates the opportunity of a free market to actually operate.

And so, I think that what is going to happen is, with this transparency, the price to my type of customers will actually come down.

Ms. LUMMIS. OK. Well, that is interesting because, obviously, the critical nature of helium to so many health-based and science-based uses makes it an absolutely critical resource. When I have been out to the Exxon Shute Creek LaBarge Plant in Wyoming and seen the helium trucks pulled up, they are printed in all different languages. And so, obviously, it is a global resource of great importance.

And so I want to thank the Chairman for our hearing today and for these witnesses. And I yield back.

Mr. LAMBORN. OK, thank you. Representative Lowenthal of Pennsylvania—excuse me, Cartwright of Pennsylvania. And Mr. Lowenthal will be the next in line on the Democratic side.

Mr. CARTWRIGHT. Thank you, Mr. Chairman. I do have some questions of the panel. My name is Matthew Cartwright. I am a freshman congressman from Northeastern Pennsylvania, a place where the landscape is being transformed at this time because of

hydraulic fracturing for natural gas. We have not only wellheads going in at record paces, but also pipelines snaking their way across the landscape in Northeastern Pennsylvania to distribute the natural gas that comes out of the ground.

My understanding is that helium is a byproduct of natural gas. And what I would like to hear from any of you on the panel is, first of all, do you have any insight into whether helium is prevalent in the natural gas being fractured out of Northeastern Pennsylvania? And second, because there has been so much fracking activity, and for other reasons, the price of natural gas has come down dramatically in the recent past. And what effect, if any, has that had on helium, and will have in the future?

Dr. ARONSON. My understanding, Congressman, is that the gas that is produced from shale formations isn't rich in helium. It is not an automatic byproduct of natural gas. It depends on the formation in which the natural gas was generated and captured. And the process by which the helium is generated is different. So it may or may not be there. And I believe there is not much in shale gas.

Mr. CARTWRIGHT. That was my suspicion. But it still leaves open the question—the fact of all of the fracking going on bringing down the price of natural gas. And what has the effect of helium been for that?

Mr. PAGE. Well, let me just make one comment. In regard to the availability of helium from natural gas, the genius of what former generations have done with the BLM creation of the storage facility is that it is an issue of storage. So, as you drill for natural gas and extract this natural resource, much of that helium gas is just being vented to the atmosphere because it cannot be captured.

So, actually, the policy is almost the reverse of the way it should be, and that is that there should be an inflow into the system, rather than us talking today about emptying the reserve. I mean if we are going to look to the generations to come, to me that just makes common sense.

Mr. CARTWRIGHT. What makes common sense, to try to capture the helium?

Mr. PAGE. Well, actually, we should be extending the pipeline in a westerly direction and continue to use the dome to store resources, or to accumulate resources, rather than exhaust them.

It has been very clear in the testimony of the importance of helium to our economy, to the future, technology. And yet we are, I think, foolishly draining ourselves of the resources. I truly don't understand why.

Mr. CARTWRIGHT. And then the corollary to my prior question of fracking producing helium, obviously it is not a big source of helium. What are the most productive ways and places in the United States where we get helium?

Mr. MORGAN. I was just going to say, as far as an end user, which is what I am representing here, it is difficult for Micron, at least, to answer all the questions about the supply and what the best way is to create the helium. We are very familiar with how it is moved around the country and so on, but I would recommend that panel three takes the opportunity to actually answer your question in a lot more detail.

Mr. CARTWRIGHT. I certainly will present that question to them. And I thank you for your attention today.

I will yield back my time, Mr. Chairman.

Mr. LAMBORN. Thank you. Representative Thompson of Pennsylvania.

Mr. THOMPSON. Thank you, Chairman. Gentlemen, thanks for participating in this panel, bringing your specific expertise to this important topic. I think your testimony, as well as, Mr. Chairman, the testimony of other witnesses we have had on this issue certainly has been enlightening, in terms of the importance of helium, strategically, to this country and, whether it is technology, innovation, new discoveries and, appropriate for today, I would say important in the whole idea of love, as well, with Valentine's Day and balloons.

My first question just kind of opens up—what do you see as the advantages of creating this auction-based system, versus a straight extension by funding of the current policy? What are the kind of the pros, or advantages this legislation has over that alternative? Any opinions?

Mr. PAGE. This is a free-market approach, and we don't currently have a free-market approach. I mean it is basically the Federal Government has created a monopoly, in terms of the availability of helium in this country. So I think that really, at the core, that is the really important thing this legislation does.

Mr. MORGAN. Yes, it is difficult for me to make certain comments when I purchase my helium from the number of people that are sitting behind me right now.

[Laughter.]

Mr. THOMPSON. That is OK. I mean we are used to sitting across from folks who don't always agree, so——

Mr. MORGAN. However——

Mr. THOMPSON [continuing]. You should be comfortable with it.

Mr. MORGAN. However, I would say that I do believe that the current policies create a certain disadvantage to some suppliers out there, and there is a certain amount of tension that is probably put into the system, where certain suppliers have to have a much higher focus on cost, and their ability to manage costs differently, based on the current system.

So, I believe the new system that is being proposed would provide a means in which to level that playing field a certain amount and, to Mr. Page's comments, create a more free-market system.

Mr. THOMPSON. OK. With that, let me go back to Mr. Morgan, I have a question specifically for you. In your testimony you wrote that we have been seeing helium supply shortages. And over the past years your company only received about 80 percent of the helium which you contracted.

What impact might these statements have on the overall helium prices?

Mr. MORGAN. Since I am an end user, our negotiations are based off of what the market is driving. I believe that the pricing essentially is established based off of a market-driven economy.

Today, the last year, and why we have been put on allocation, is not necessarily the eminent situation with the helium reserve, but it is because of the maintenance activities that have been done

throughout this last summer at both the Exxon facility in Wyoming, as well as the maintenance that has been done at the BLM facility, which we learned about later had impacts through the summer. So that is what has been driving our allocation methodology.

We are concerned, which has been highlighted, with the potential of 30 percent of the market, or 30 percent of the helium being taken off the market, due to a need for action here at the legislative level.

Mr. THOMPSON. Mr. Page, in your testimony you mentioned the difficulty of obtaining the helium through the auction process, specifically because of your "lack of access to infrastructure." Do you have any concerns about the way the auction is set up in H.R. 527?

Mr. PAGE. No, I think that there is a remedy with this new bill.

Mr. THOMPSON. OK, very good. And my final question, just a follow-up, is you also discuss concerns with a monopoly on the helium refining side. How would you propose increasing refining?

Mr. PAGE. How would I propose to—I am sorry?

Mr. THOMPSON. Increasing refining.

Mr. PAGE. Well, I think that certainly introducing a Nitrotec or some other type of outlet would be a first step. All of the helium that is being refined today by the three refiners are liquified. And there is a tremendous amount of costs that are built in for getting it cold enough and getting it pure enough to liquify it. And fully a third of the users out there don't even want it. So you are building in additional costs that are unnecessary.

So, I think that is a good first step. It doesn't have to be as high-tech. It is also a great way to make the reserves more viable for a longer term, because they will not require the huge volumes of helium to continue operating. The current refiners—they just need a lot of volume to make it profitable.

Mr. THOMPSON. Thank you. Thank you, Chairman.

Mr. LAMBORN. Thank you. And the gentleman from California, Mr. Lowenthal.

Dr. LOWENTHAL. Thank you, Mr. Chairman, and thank you for holding this hearing. I appreciate it. And also to the Ranking Member. I think you answered some of these questions already on the panel, I just want to dig a little deeper.

And the first question is that the last time that the refining capacity of the refineries connected to the BLM helium reserve and were collected and made public was in the year 2000, I believe. And the changes in refining capacity that have occurred since that time have not been made public. And it is unclear whether the BLM is even aware of these upgrades.

And so, my question is, do you think that the transparency provisions that are included in this legislation, which would require the public reporting of refining capacity would help your industries to participate in this new helium auction and the markets? You have talked about the benefits, potentially, of the auction and of the markets. Would the transparency of actually the refining capacities help in this process? And I ask any of the members of the panel to respond.

Dr. ARONSON. I am certainly no expert in markets, but it seems to me knowing the supply capabilities will help regulate the market and the products. So it has to help.

Dr. LOWENTHAL. OK. Anybody else want to jump in?

Mr. BOERSEN. So the transparency provisions, as many of us have mentioned, are absolutely critical. Whether the capacity piece of it specifically is key to that is hard to say. But having all that information in the public light would have certainly prevented major problems that companies like myself and Mr. Morgan's experienced last year.

Mr. MORGAN. I absolutely concur with Mr. Boersen with regard to the impact of visibility into the maintenance and the minutes associated between the meetings that are associated between the distributors and the refiners and the BLM. We would obviously appreciate another view of visibility that would allow us to keep track of what is going on in the market.

Dr. LOWENTHAL. Thank you. And my second question is that whether, in fact, to keep—and you have talked about the impacts and moving toward the auctions, but what would happen if we didn't? What would happen, in your perception, if we just keep the current system in place until we exhaust the BLM supply? Do you think that we are going to have even more disruptions if we do that, and there will be more price spiking? And what happens if we don't move forward?

I mean there has been some talk that sometimes it is difficult to get legislation out of this Congress. I know that is a shock to all of you. But what would happen if we don't? Where do you see the future, in terms of paying to your industries and I know you have touched on this, but maybe you can respond a little bit more.

Mr. PAGE. I personally don't think that our industry will survive. There just is not a above-the-board, even-handed approach to the distribution of helium to our industry. And at any given time a manufacturer, a major manufacturer of balloons says that 20 to 25 percent of retail locations have no helium and do not know when they are going to have it. You can certainly see the impact that that will have, the ripple effect.

And there is literally hundreds of thousands of jobs that are at stake that are related, either on the retail side or on the production or those allied industries, that work in lockstep with our industry to promote our product line.

Dr. LOWENTHAL. Others? What would happen to you if we continue where we are today?

Mr. BOERSEN. So, first and foremost, we need a bill. Right? Without a bill, we have BLM shut down and we have a major problem in the fall. So that is job one, to get the bill passed.

As for the specifics on the auction, I think the Committee can manage figuring out exactly how that should be structured. But job one is getting a bill passed.

Dr. LOWENTHAL. Thank you.

Dr. ARONSON. I would say that since we are seeing already that even Federal users, contractors to Federal agencies, which have some priority, are seeing price and availability fluctuations increasing, just doing more of the same is going to get us more of the same. So——

Dr. LOWENTHAL. More spikes? More——

Dr. ARONSON. Yes, right.

Dr. LOWENTHAL. More difficulty in obtaining——

Dr. ARONSON. Especially with a big chunk of the world's market supply going offline, it is only going to get worse.

Mr. MORGAN. As far as the semiconductor industry, obviously we would have to make some serious adaptions to how we do business. Conservancy measures in getting away from helium would be a major disruption to what we would have to incur. I agree with Mr. Boersen with regard to job one is to get the bill passed so that we have the supply today, and that we can sustain operations, moving forward.

The semiconductor industry is obviously supporting tremendous growth. You can look around the room here, and everything that is being videotaped and so on is going onto some sort of memory module somewhere in the world. And without sustainment of that growth, a lot of opportunities would be curtailed in the future.

Dr. LOWENTHAL. Thank you. And, Mr. Chairman, I yield the remainder of my time.

Mr. LAMBORN. All right, thank you. And I want to thank the panel for being here. I appreciate your taking the time and effort to help inform us on this important issue.

And I would like to now bring up the third and last, but certainly not least, panel, representatives from the refining and distributing portion of the helium industry.

We have with us: David Joyner, President of Air Liquide Helium America, Inc.; Tom Thoman, Division President for Gases Production of Airgas, Inc.; Kevin Lynch, Senior Vice President for Specialty Gases and Helium of Matheson Tri-Gas; Walter Nelson, Director for Sourcing and Supply Chain of Air Products and Chemicals, Inc.; Nick Haines, Head Global Helium Source Development of Linde North America; and Scott Kaltrider, Vice President for Business Management and Helium of Praxair, Inc.

And as you are coming forward I will explain how the testifying works. Like all witnesses, your written testimony will appear in full in the hearing record, so I would ask that you keep your oral statements to 5 minutes or less, as outlined in our invitation letter to you and under Committee Rule 4(a).

Our microphones are not automatic, so you need to turn them on when you are ready to begin. And as you have seen with earlier panels, the lights turn yellow after 4 minutes and turn red at 5 minutes. And I would ask you to conclude at that time, if not sooner.

So, we will now begin with the first of our distinguished panelists, Mr. Joyner.

STATEMENT OF DAVID JOYNER, PRESIDENT, AIR LIQUIDE HELIUM AMERICA, INC.

Mr. JOYNER. Thank you, Mr. Chairman and members of the Committee. I appreciate the opportunity to testify today. I am President of Air Liquide Helium America, part of Air Liquide's U.S. organization. Headquartered in Houston, Texas, Air Liquide has over 5,000 employees in over 200 locations throughout the country. Air Liquide is also a major supplier of refined liquid helium, world-

wide. And through my over 20 years in the natural gas sector, I have gained an in-depth understanding of the helium business.

And I want to commend and thank you for your hard work and that of your staff over the last year to address this important issue. It is Air Liquide's highest priority to assist you in continuing the operation of the Federal helium reserve in a manner that creates a stable and reliable supply for end users, supporting their needs as well as providing appropriate return on a Federal resource for the U.S. taxpayer.

Today I will confine my remarks to two issues that we see as important, as the Committee continues its legislative work: the first, accessibility; and the other, price discovering and qualified bidders.

Regarding accessibility, the helium stored at the Federal helium reserve is a crude helium that needs to be refined—in other words, tolled into a liquid helium—in order for it to then be transported out to other facilities for additional processing, and then on to end users. Air Liquide is a non-refiner on the BLM system infrastructure. And as such, we must enter into tolling contracts with the refiners who are also our competitors in the sales market in order to be able to distribute any helium that we purchase from the BLM.

So, put simply, refiners are not currently entering into tolling agreements for open-market sales with non-refiners. And as the 2010 NRC report found, without such tolling contracts, non-refiners are effectively prohibited from using the BLM source, leaving end users with less competition for their business.

To be clear, these refining facilities pre-existed the 1996 Act. They were built to take advantage of private helium reserves that were also on the infrastructure. But as an unintended consequence, now the Federal reserve is captive to these refineries.

As a result, the current system does not promote a competitive market. The proof is that Air Liquide is the only non-refiner that has bought any amount of BLM helium in years. And despite that, we are currently not able to have a refiner engage in a new open-market tolling agreement.

Now, Mr. Chairman, we have heard some analogies that folks have been making in an attempt to shut down the discussion on access related to things such as the strategic petroleum reserve and car manufacturers. These analogies are fatally flawed, and I would be happy to answer any questions in those regards following testimony. Our goal is to promote competition and appropriate return on the taxpayer resource.

Now, to ensure the Committee's goal of increasing access is realized, we recommend clarifying that purchase of helium and Part B of the auction will receive corresponding helium delivery allocations. Such an approach has already been a proven success. The BLM recently enacted a program that encourages bidders to supply helium to Federal users with an incentivized tolling basis. In fact, Air Liquide has participated in this system, and now reliably supplies critical helium needs to the U.S. military as a part of that program.

So, linking the purchase volumes with corresponding delivery volumes on the pipeline meets the twin goals of increasing access and ensuring reliable supply for end users, with the added benefit of administrative ease. Now, let me be clear. This is a proven in-

centive-based proposal. And regardless of claims you may hear today, it does not interfere with private contracts in any way.

Now, with regards to the issue on price discovery and qualified bids, on pricing we urge the Committee to be cognizant of the impact that the changes to the BLM pricing structure can have on the global helium market, given that the BLM serves as an index for sources worldwide.

So, first, in determining the minimum sales price, we suggest that you look at all contracts active in the last 2 years, so the BLM has a maximum number of data points to arrive at an accurate minimum price that offers the fairest return to the U.S. taxpayer. Additionally, we recommend adding "wholesale" to the definition of qualifying helium transactions. It provides a more objective and transparent calculation that can be repeatable to determine the net crude helium value.

And finally, as the Committee departs from the status quo to develop a new pricing auction that is based on price, not just volume, we urge putting safeguards in place that ensures this one-of-a-kind system does not distort prices worldwide, as a result. And we believe those safeguards will mitigate price volatility for end users.

Now, regarding the qualified bidders, we recommend ensuring persons with an infrastructure capable of accepting and delivering threshold quantities of helium be allowed to participate in the auction process. Doing so ensures that BLM can manage its sale of Federal crude helium effectively and efficiently, and also ensures that the broadest base of end users can depend on the broadest competition of bidders to service their helium needs and address their concerns over reliability of end use supply.

Like the Committee, Air Liquide has worked to achieve consensus among industry stakeholders in order to identify a path forward for extending the Federal reserve and ensuring a reliable supply of helium for end users, and we look forward to continuing this effort, and strongly believe that changes to the current system are achievable without disrupting supply and while still enhancing competition in return for the U.S. taxpayer.

We thank the Committee for the testimony today.

[The prepared statement of Mr. Joyner follows:]

Statement of David Joyner, President, Air Liquide Helium America, Inc.

Chairman Hastings, Ranking Member Markey, and Members of the Committee, I appreciate the opportunity to testify today on issues relating to the domestic helium industry and the Federal Helium Reserve. My name is David Joyner, and I am the President of Air Liquide Helium America, Inc., the helium company for American Air Liquide, one of the Nation's leading industrial and medical gas companies. Headquartered in Houston, Texas, Air Liquide has over 5,000 U.S. employees in more than 200 locations throughout the country. For decades, Air Liquide has offered industrial and medical gases and related services to the Nation's largest industries including manufacturing, electronics and healthcare. As a company, Air Liquide is focused on technological innovation to help make our Nation's manufacturing and industrial sectors more efficient, environmentally friendly and productive.

I have been with Air Liquide working in the industrial gas sector for over twenty years, most recently as President of Air Liquide Helium America. In this role, I have gained an appreciation for the complexities of the helium market as well as the importance of helium to a variety of end-users. At the outset, I want to commend and thank you all for your hard work and that of your staff over the last year to consider this important issue. It is Air Liquide's highest priority to assist you in continuing the operation of the Federal Helium Reserve in a manner that creates

a stable and reliable helium supply capable of supporting the needs of end-users as well as providing an appropriate and reliable return on a Federal resource for U.S. taxpayers.

Air Liquide is a major supplier of refined helium in the United States and globally to customers that range from companies on the cutting edge of the electronics industry to health researchers, automotive suppliers, laboratories and manufacturing facilities all over the world. When Congress passed the 1996 Helium Privatization Act (the 1996 Act), it was expected that the supply of crude helium in the Federal Helium Reserve would last until 2015. It is now possible that the Federal Helium Reserve's supply of helium could last much longer if properly managed. Despite the amount of remaining helium, the funding mechanism in the current law could lead to the closure of the Federal Helium Reserve in the Fall of 2013. This closure would effectively take close to a third of the global supply and half of the domestic supply of helium offline creating shortages and substantially increasing the cost of helium for end-users. Accordingly, the timing of this hearing is critically important as Congress must act in order to ensure access to the helium remaining in the Federal Helium Reserve.

As members of this Committee have noted in previous hearings, a stable supply of helium is important to our Nation's economy as it is a vital component in products ranging from magnetic resonance imaging (MRI) machines to airbags for the automotive sector. Helium is also important to our Nation's security as it is used in a variety of military and defense surveillance programs. Finally, the reliability of our helium supply is important for the Nation's research efforts such as those being undertaken at our Nation's national laboratories and at our own Delaware Research and Technology Center. These important efforts would be threatened by any sustained shortage in the domestic helium supply, particularly one that can be largely avoided by responsible management practices.

For these same reasons, it is important to consider what changes can be made to create a more open and competitive helium market that would improve reliability and benefit end-users. To that end, I would like to confine my remarks to two issues that we see as important as the Committee considers legislation relating to the Federal Helium Reserve: (1) accessibility; and (2) price discovery and qualified bidders.

I. Increasing Access and Creating a More Competitive and Transparent Market for Federal Crude Helium

As the Committee is aware, the helium stored at the Federal Helium Reserve is "crude" helium which must first be refined (i.e. "tolled") into liquid before it is transported to other facilities for additional processing and then on to end-users. The process of refining helium involves the transport of the crude helium from the Federal Helium Reserve through the Helium Pipeline—a system that runs through Kansas, Oklahoma, and Texas—to one of six refining facilities that are located on the pipeline. These six refining facilities are owned by just four companies and were established by those companies in the last century to take advantage of privately-owned crude helium supplies. Nevertheless, with the enactment of the 1996 Act and the resulting use of the federal government's infrastructure to sell crude helium from the Reserve, these companies gained the unexpected windfall advantage of controlling access to the public's stockpile of crude helium due to their preexisting refineries.

Air Liquide is a so-called "non-refiner" and, as such, we must contract with the refiners—who are also our competitors in the sales market—to be able to distribute any helium purchased from the BLM. Put simply, refiners are not entering into tolling contracts for open market sales with non-refiners, effectively prohibiting non-refiners from utilizing the BLM source. In recent years, the BLM has contractually committed 94 percent of the captive deliverable volumes to these refiners and six percent to non-refiners. However, in reality, the refiners also control the remaining six percent because without a tolling contract in place, the non-refiners cannot be assured of refined product. Given that any amount of crude helium that remains unsold reverts back to the refiners for purchase, another disincentive for the four companies to provide tolling services exists—an additional market advantage that was surely not envisioned by the 1996 Act.

This current system's drawbacks were noted by the National Research Council's 2010 report, *Selling the Nation's Helium Reserve,* (the "NRC 2010 Report") which stated: "given that refining the helium must take place at one of the facilities connected to the Helium Pipeline, the limited number of potential processors of feder-

ally owned crude helium place significant restrictions on alternatives to the current sale procedures being followed by BLM." [1]

Proof that this system does not promote a competitive market can be seen in the fact that, in the last five years, Air Liquide has been the only non-refiner to purchase any amount of the six percent allocation. The consequences of the situation described above have important implications for end-users of helium. Adopting a more market-based approach was recommended by the NRC 2010 Report which stated the following:

> The Bureau of Land Management (BLM) should adopt policies that open its crude helium sales to a broader array of buyers and make the process for establishing the selling price of crude helium from the Federal Helium Reserve more transparent. Such policies are likely to require that BLM negotiate with the companies owning helium refining facilities connected to the Helium Pipeline the conditions under which unused refining capacity at those facilities will be made available to all buyers of federally owned crude helium, thereby allowing them to process the crude helium they purchase into refined helium for commercial sale.[2]

Utilizing this approach would result in a more accurate and transparent BLM system and would benefit consumers by increasing the number of suppliers competing for the business of federal users and open market users with helium from the BLM. In an analogous situation, the United States has recognized the benefits of opening privately owned interstate pipeline capacity to the market in the natural gas industry where ownership of transportation capacity rights is held separate from ownership of the actual gas pipeline.[3] Noting the impact this system has had on the domestic market, the report states: "[u]nbundling of capacity rights from facility ownership makes it possible for a producer to access markets through a competitive bid for pipeline capacity."

We greatly appreciate the efforts of Members of this Committee and Committee staff to meet the goal of increasing access in H.R. 527—the Responsible Helium Administration and Stewardship Act. In addition to Chairman Hastings and Ranking Member Markey, we would specifically like to recognize Representative Flores for his active and diligent engagement on this issue and similar focus towards ensuring the program's future sustainability. To ensure that this goal is realized on the ground, we are recommending the insertion of language into the bill that would tie volumes of crude helium purchased in an auction to corresponding pipeline delivery allocations. Such an incentive-based approach is not unprecedented. BLM recently piloted a methodology that encourages bidding to supply helium to federal users via the "in-kind" and "MOU" program by providing the buyer of the helium volume with a corresponding helium delivery allocation that is held for the buyer until the buyer designates that the volume is to be delivered to a certain refiner who has agreed to toll the in-kind volumes. To match this program, we recommend clarifying that purchasers of helium in Section 2 Part B of H.R. 527's envisioned auction would also receive corresponding helium delivery allocations. Working together with other provisions in H.R. 527 that ensure competitiveness and fair acts and practices, an expansion of this methodology to include the auction envisioned by H.R. 527 would not interfere with contractual arrangements between private parties but would instead increase participation and transparency in the BLM's efforts while providing greater competition and reliability for end-users.

Finally, we believe the transition process to a new sales system, especially system similar to the one already being managed by BLM, should be a seamless and prompt progression to allow both industry and end-users to have the confidence that a reliable supply of helium from the BLM is ensured.

II. Price Discovery and Qualified Bidders

Under the provisions of the 1996 Act, the BLM was directed to sell off the helium from the Federal Helium Reserve at a price solely designed to pay down the Reserve's existing debt. It is commonly agreed that this resulted in the BLM charging a price below the free market value of crude helium. Air Liquide supports active price discovery that would allow the Secretary to establish a more accurate minimum price for federal crude helium. Currently, H.R. 527 would only allow the Secretary to consider "new or newly negotiated" contracts for the purchase or sale of at least 15 million standard cubic feet of helium over the previous two years. It is

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[1] *Selling the Nation's Helium Reserve,* National Research Council: Committee on Understanding the Impact of Selling the Helium Reserve, The National Academies Press (2010).

[2] *Id.* at 8.

[3] *Shale Gas and U.S. National Security,* Kenneth B. Medlock, et al., James A. Baker III Institute for Public Policy (July 2011).

our recommendation that the phrase "new or newly negotiated" be stricken from this definition as most helium contracts in the market are active long-term contracts. These long-term contracts typically have price adjustments year-over-year that ensure they will reflect current market conditions. It is our recommendation that such long-term contracts, active in the last two years, be included for the Secretary's consideration so BLM has the maximum number of data points from which to derive a minimum sale price that offers the fairest return to the U.S. taxpayer. We would also recommend that the reference be clarified by adding "wholesale' to the definition of qualifying domestic transactions to avoid the subjective and unrepeatable analysis necessary to theorize the net crude helium value in such transactions.

Air Liquide's goal is to ensure a stable and reliable supply of helium for end-users. Accordingly, as H.R. 527 opens up access to federal crude helium for more bidders, we also recommend ensuring that only persons with an infrastructure capable of accepting and delivering vast quantities of helium (we have recommended a minimum threshold of 750,000 standard cubic feet delivery increments and prorated 10,000,000 standard cubic feet quarterly lots) be allowed to participate in the auction process. Doing so allows the BLM to manage its sales of federal crude helium effectively and efficiently while ensuring that the broadest base of end-users will be able to rely on a broader base of bidders to service their helium needs.

Finally, as stated, we commend the Committee's efforts to include methodology that can achieve a more accurate minimum price for BLM crude. As the parties work towards achieving the most appropriate return to the U.S. taxpayer, we also ask the Committee to be cognizant of the impact that future changes to the BLM posted crude price will have on the global helium market. As Air Liquide has previously testified, a predictable, repeatable and verifiable BLM crude price will carry lasting, stabilizing effects for not only the domestic but also the global helium community.

Air Liquide appreciates the Committee's attention to this important issue and supports the goal of ensuring the continuing viability of the Nation's helium supply. We believe the changes to the current system are achievable without disrupting supply and would do much to add competition to the market and benefit consumers. I thank the Committee for inviting me to testify, and I would be pleased to answer any questions you may have.

Mr. LAMBORN. OK, thank you.

Mr. Thoman.

STATEMENT OF TOM THOMAN, DIVISION PRESIDENT, GASES PRODUCTION, AIRGAS, INC.

Mr. THOMAN. Mr. Chairman and members of the Committee, my name is Tom Thoman. I am the Division President for Gases Production at Airgas. And we are headquartered in Radnor, Pennsylvania.

I would like to start this morning by expressing Airgas's appreciation for the significant efforts that have been made by this Committee and its staff. You have tackled the tough issues and you are trying to remedy a distorted market that has historically been closed to all but a few bidders.

Airgas was founded in 1982 and operates the largest domestic infrastructure and supply chain for delivering helium in the United States, with more than 80,000 customers, accounting for 22 percent of the domestic market. Our customers range from OEM manufacturers, research, analytical, environmental, and government labs, the aerospace industry, oil, gas, and chemical industries, welders, hospitals, clinics, and the Federal Government. The lion's share of our helium business is with customers like these.

As you well know, the Helium Privatization Act of 1996 established a pricing mechanism based on debt repayment and a sales construct whereby taxpayer-owned crude helium can effectively only enter the market after first being allocated to one of three

companies with pre-existing refining facilities on the BLM pipeline. Well-intended as the reforms set forth in H.R. 527 are, we believe they fall short of what is needed in the U.S. marketplace.

Specifically, there are four critical elements that must be addressed in the bill, the absence of any one of which could well result in a worse situation for U.S. helium markets than the situation we confront today. In fact, because of the contracts we have with the refiners, and our commitment to meet the need of our customers, a continuation of the current regime, but with pricing measures like those proposed in this bill, would be preferable to a construct that fails to adequately address each of these issues. Let me touch on them.

First, the bill must recognize the capital-intensive nature of this business, and the need for a certainty of supply. A requirement that auctions be held no frequently than two times each fiscal year would undermine the ability of refiners and bidders to effectively use their assets to service customers. Long-term agreements are a norm in our business because of the physical assets required to transport and store helium. They are very expensive, and generally acquired only at the time to meet the need for a new long-term customer.

With auctions occurring two times a year, we would have no way of knowing, from period to period, whether we would have product to meet our contractual obligations to our customers. And neither Airgas nor other potential bidders would be incented to make the investment necessary to serve or continue to serve the end user market. Airgas, therefore, asks that you consider staggered auctions, providing for multi-year supply commitments.

Second, the bill will not meet its objective if refiners are not obligated to refine for winning bidders that have the infrastructure to serve the U.S. market and do so at a cost plus tolling fee that will enable those winning bidders to be competitive. This is critical, because the refiners and those who might like to bid are now, and will continue to be, competitors. Without mandatory tolling at a reasonable cost, no party, other than a refiner, would be able to risk bidding on helium in an auction.

And this is not a lot to ask of the refiners. After all, since the passage of the 1996 Act, they have enjoyed a virtual monopoly that repaid any investment they have made many times over.

Third, the bill must thwart opportunities for market manipulation and disruption by imposing immediate storage fees and mandating the prompt removal of all acquired helium. Also, this Committee should seriously consider an allocation methodology based on a bidder's share of the U.S. end user market, with pricing determined by measures like those you have proposed in this bill.

Fourth, and perhaps most critical, the bill should provide that all helium that is owned by the U.S. taxpayer, or that has benefitted from the use of the Federal pipeline and/or storage facility, be designed to meet domestic demand before it can be exported. We believe that such a provision is justified by the fact that this is a taxpayer-owned strategic resource which is currently under-supplied in the domestic market. We are not proposing a ban on exports. We are proposing that steps be taken to assure that this vital resource is prioritized to serve domestic needs.

Airgas appreciates the efforts of H.R. 527 to increase access, foster competition, and drive toward a more market-based return to the taxpayer. With the adoption of our four recommendations, we believe this bill will significantly benefit the marketplace, the end users, and, importantly, taxpayers themselves.

Thank you for the opportunity to testify, and we will look forward to your questions.

[The prepared statement of Mr. Thoman follows:]

Statement of Tom Thoman, Division President—Gases Production, Airgas, Inc.

Mr. Chairman and Members of the Committee, I am Tom Thoman and I serve as the Division President of Gases Production for Airgas, Inc., headquartered in Radnor, Pennsylvania. I had the honor of addressing a subcommittee of this panel last July regarding the impact of helium supply shortages on our economy, and I thank you for the opportunity to testify before many of you again, this time on the specifics of the Federal helium program.

As many of the Committee Members heard last year, we are at a crucial point in addressing how the Nation will treat this critical, but diminishing, natural resource. In my testimony today, I intend to briefly revisit the supply constraints affecting our business and our customers, while focusing the majority of my testimony on recommendations for how best to alleviate the situation—including suggestions regarding the bill H.R. 527.

Before addressing a few key points in the bill, let me first express Airgas' appreciation for the significant efforts that have been made by this Committee and its staff. Rather than taking the easy road of maintaining the status quo, you have evidenced through this bill your willingness to tackle the difficult issues and to try and remedy a distorted market that has historically been closed to all but a few participants.

Founded in 1982, Airgas operates the largest domestic infrastructure and supply chain for delivering helium in the U.S., with more than 80,000 customers accounting for 22% of the domestic market. We are therefore in a unique position to attest to both the vital role that this limited resource plays in our economy, and the disruptive effects that the current shortage is having on our customers.

Airgas serves a diverse customer base. Our customers include OEM manufacturers that use helium in the airbags we have in our cars and trucks; hospitals, clinics and nursing homes where helium is mixed with oxygen to provide life-saving breath for asthma sufferers; research, analytical, environmental, and government labs where helium is used as a carrier gas in chromatography; the aeronautical and aerospace industries that use helium for leak detection; welders who use a blend of helium to produce shielding gases when building and repairing nuclear facilities; hospitals and clinics where much-needed maintenance supplies of liquid helium are used to cool MRI and NMR equipment; diving companies that use helium to produce diving gases for offshore, deepwater work on oil platforms and drilling rigs; and the Federal government that uses helium in weather monitoring and defense applications. Uses like these represent the lion's share of our helium business.

As you well know, the Helium Privatization Act of 1996 established a pricing mechanism based on debt repayment and a sales construct whereby the taxpayer-owned crude helium can effectively only enter the marketplace after first being allocated to one of the three companies with pre-existing refining facilities on the BLM pipeline. Taken together, the restricted access to the resource and the manufactured price have created a warped situation where a substantial amount of U.S. sourced helium, much of which is owned by U.S. taxpayers, is being sold overseas while our domestic end-user community is suffering from extended supply shortages.

Mr. Chairman, it is clear from H.R. 527 that the Committee is well aware of the numerous flaws in the existing regime for sales of taxpayer-owned helium from the Federal Helium Reserve, and how that faulty regime underpins the problems we now face. Those flaws have been accurately and repeatedly documented by the National Academy of Sciences, the GAO, and the Department of the Interior's Inspector General.

Well intended as the reforms set forth in H.R. 527 are, we believe they fall short of what is needed in the U.S. marketplace. My goal is to emphasize the importance of including four critical elements in the bill, the absence of any one of which could well result in a worse situation for U.S. helium markets than the situation we confront today. In fact, from the perspective of the U.S. helium market we serve, a con-

tinuation of the status quo, with the addition of pricing measures like those in last year's Senate Bill 2374, would be preferable to a flawed bill that fails to adequately address each of these issues.

First, the bill must recognize the capital intensive nature of this business and the need for certainty of supply. The current bill provides that auctions must be held no less frequently than two times each fiscal year. While we understand that frequent auctions may be more reactive to price changes in the marketplace, such a policy would undermine the ability of refiners and bidders to effectively utilize their assets and serve their customers. Airgas' typical contract with its end-user customers extends for a five-year term. Agreements with our suppliers are even longer. One reason for this is that the physical assets required to transport and store helium are very expensive and are generally acquired only to meet the need of a new, long-term customer. With auctions occurring two times a year, we would have no way of knowing from period to period whether we would have product to meet our contractual obligations to our customers. In addition, neither Airgas nor other potential bidders would be incented to make the investment necessary to serve or continue to serve the end-user market. Airgas therefore asks that you consider staggered auctions providing for multi-year supply commitments. In the first auction, the BLM could agree to sell 2-, 3- and 4-year supplies and in subsequent years the auctions would replace those expiring that year. During intervening years, the helium being sold under a multi-year commitment could be subject to a CPI or other formulaic cost adjustment.

Second, the bill will fail in its mission if refiners are not obligated to refine for winning bidders that have the infrastructure to serve the U.S. market and to do so at a cost plus tolling fee that will enable those winning bidders to be competitive. This is critical because the refiners and those who might like to bid are now, and will continue to be, competitors. Without mandatory tolling at a reasonable cost, no party other than a refiner will be able to risk bidding on the helium at an auction. This is not a lot to require of the refiners. After all, since at least 1996 they have enjoyed a virtual monopoly that has repaid any investment they made many times over.

Third, the bill must thwart opportunities for market manipulation and disruption by imposing immediate storage fees and mandating the prompt removal of all acquired helium. Otherwise, supply chains will be disrupted and winning bidders will be in a position to choke off supply and drive-up prices to customers suddenly unable to get product from their previous supplier. A bill which provides for an allocation methodology based on a bidder's share of the U.S. end-user market, with pricing determined by measures like those you have proposed in this bill, would best address the market disruption/manipulation issue and would also provide a better opportunity for U.S. businesses and researchers to get the helium they need. We think the House should seriously consider such a fair and straight-forward approach.

Fourth, and perhaps most critical, the bill should provide that all helium that is owned by the U.S. taxpayer or that has benefited from use of the federal pipeline and/or storage facility be designated to meet domestic demand before it can be exported. We believe that such a provision is justified by the fact that this is a taxpayer owned, strategic resource which is currently undersupplied in the domestic market. We are not proposing a ban on exports; we are merely proposing that steps be taken to assure that this vital resource is prioritized to serve domestic needs.

Airgas firmly believes that unless this bill (i) addresses the capital intensive nature of this business and its need for certainty of supply by providing for multi-year supply commitments, subject to CPI or other formulaic price increases; (ii) mandates tolling at reasonable rates for the benefit of winning bidders that do not have refining capacity on the pipeline; (iii) protects against market disruption and manipulation; and (iv) provides that helium that is owned by the U.S. taxpayer or that has traveled through or been stored in the Federal system be applied to domestic needs first, our customers and other U.S. businesses that rely on this vital resource will continue to suffer from unsustainable supply disruptions.

Response to questions submitted for the record by Tom Thoman, Division President–Gases Production, Airgas, Inc.

Answer to Question 1

We have sought to enter tolling contracts with the three refiners and have been rejected.

We appreciate the effort contained within H.R. 527 to incentivize tolling agreements, however we believe they fall short of what is necessary, and in fact, serve

as a disincentive for the refiners to provide the very services the bill seeks to compel. Because the legislation allows any entity with a tolling agreement to participate in the first sales tranche of 60%, the refiners are actually disincentivized to make such arrangements available, because to do so would come at their own expense in their otherwise guaranteed access to 60% of the Reserve's resources. Another reason that the refiners will not toll for the bidders in tranche 2 is that though the 20% "set-aside" in tranche 3 is intended to serve as a carrot for the refiners to make their services available to the bidders in tranche 2, we are extremely confident that the refiners would prefer for that final tranche not to be made available to anyone rather than have it procured by a competitor. In such a scenario, (as with a multitude of other possibilities for how the proposed auction system would play out), if the 20% is not made available due to their refusal to refine for competitors, they will simply exercise force majeure clauses on their private contracts with the distributors and U.S. businesses will suffer.

Airgas strongly supports mandatory tolling. In fact, we believe that in the absence of guaranteed access to tolling, any alternative proposal will fail because it will not be in the commercial interest of the non-refiners to bid on a resource for which there is no certainty of having it refined.

We believe that only with some guaranteed access to refining services can genuine competition for federal helium be truly assured. We believe that the circumstances justify a requirement that the refiners agree to perform these services as a pre-condition of participating in future federal auctions. While the precise origins of these refining facilities remain murky, they have (at a minimum) enjoyed exclusive access to federally managed, taxpayer funded, facilities for the transportation and storage of federally owned helium. Further, as a result of the 1996 legislation they have enjoyed a monopoly on the purchase of that federally owned helium—purchases which took place at below market prices. In the absence of new legislation all access to federal helium comes to a halt. Therefore, the refiners have no argument that they have a reasonable expectation that their monopoly of access should continue. In light of this, and the remarkable benefits they have received over the last 16 years, it is perfectly reasonable to require them to perform refining services for others as a pre-condition of participating in future auctions. Such a requirement is essential if meaningful competition is to be achieved.

Answer to Question 2

Airgas fully supports the 30% acquisition limitation by any one party. Such a limitation is necessary to ensure that market distortions do not result as a consequence of one party, or a small number of parties, controlling a disproportionate share of this taxpayer owned resource. However, it is not effective as a tool to facilitate competition unless H.R. 527 is adjusted to allow for mandatory tolling, increased participation by qualified participants, and improved surety of supply. We believe it is necessary that the bill facilitates a regime where 50% of the auctioned volumes would be reserved for refiners, and the other 50% would be competed for by qualified participants (defined as those entities which can demonstrate ownership of the necessary infrastructure or assets to deliver the product to the end-use market, or participants who can demonstrate use of 15 million scf of helium per year). We would further support allowing any unsubscribed helium in the second 50% to revert back to the refiners. We believe that such a program, accompanied by guaranteed access to refining services, will afford Airgas and similarly situated companies the opportunity to purchase sufficient volumes of helium to meet our obligations to domestic consumers, many of whom are currently on allocation. If enacted, the commercial, economic, and market factors flowing from such a regime will drive fair competition, rigorous participation, a superior return to the taxpayer, and vastly improved security of supply for domestic end-users.

Mr. LAMBORN. OK, and thank you.

Mr. Lynch.

STATEMENT OF KEVIN LYNCH, SENIOR VICE PRESIDENT, SPECIALTY GASES AND HELIUM, MATHESON TRI-GAS, INC.

Mr. LYNCH. Thank you, Mr. Chairman and distinguished members of the Committee.

Matheson is the sixth largest supplier of helium in the world and within the U.S. We are a non-refiner and we source all of our helium through transactions with private parties that are not con-

nected to the BLM or the reserve system. But we are interested in how this bill affects the helium industry, overall.

Matheson strongly agrees with the stated goals of H.R. 527: to ensure stability in the helium markets, while protecting the interests of the American taxpayer. And we are strongly in favor of the bill's increased reporting requirements, which we believe will improve transparency and provide useful information to industry participants. Unfortunately, we believe that H.R. 527, as currently drafted, subverts the goal of market stability, and does not sufficiently address the issue of access by non-refiners to the helium reserve.

As has been noted, the helium industry is built on long-term sourcing and sales contracts with annual escalators and renegotiations that are generally spaced several years apart. Efficient distribution of helium requires investment in very expensive and specialized long-lived assets. In order to plan and invest accordingly, buyers and sellers of helium need to have reasonable assurance that they will have access to helium from their supplier over the duration of a long-term contract. And under the proposed biannual auction system, the planning horizon will be no longer than six months.

In addition, many of the largest private helium sourcing transactions in the world are linked to the BLM posted price for crude helium. And, under the proposed auction system, the BLM posted price would no longer exist, which means those contracts would all need to be renegotiated. For these reasons, we believe that the proposed auction system would result in much greater volatility in price and availability, and would be very disruptive to world helium markets.

The bill attempts to increase access to the Federal helium reserve's crude helium stockpile by opening bidding to parties who can demonstrate that they have their own refining capacity or have tolling agreements for refining in place. As has been discussed, that is problematic. The helium, to get to market, must be purified. The only people who, practically speaking, can purify it are the refiners, who would be competing against the non-refiners for access to the same crude helium. And we do not believe that any such tolling arrangements will be available at market-competitive prices for non-refiners.

It has been our experience, going back to 2007, that refining contracts or, excuse me, tolling contracts, are not available at market price. In 2007, Matheson purchased crude helium from the Federal helium reserve. In 2009, we attempted to purchase tolling services from all of the helium refiners, and all four declined to bid. So the crude that we purchased 6 years ago still sits in the Federal helium reserve, and it sits on our balance sheet as an unutilized asset today. This experience is what gave rise to our decision in January 2010 to file a petition for rulemaking with the U.S. Department of the Interior, which is submitted with my testimony.

The bill also seeks to address the access issue by stating that any party may build a helium refining plant and add it to the pipeline to get access to crude on terms equal with the existing plants. But any new plant of any commercial scale would not be online at least until 2015, if the project started today. And, given the expected

sunsetting of the helium reserve by 2020, you would have a maximum useful life of 5 years to recover your investment on that plant. We think it is very unlikely that anybody will invest in significant helium refining capacity to add to the pipeline.

With all that said, we believe that, with some adjustments, H.R. 527 can achieve the goals of greater access and market stability, while still generating fair returns for the American taxpayer on the government's investment in helium infrastructure.

The outline of a plan we think would work looks like this. The current practice of allocated and non-allocated sales of crude helium would continue. The allocated amount of crude helium would be available only to refiners, but it would comprise 80 percent of the total crude helium, instead of 94 percent, as it is today. The allocated sale price would continue to be a posted price, or a market price. But the market price would be determined by a robust market survey similar to the one described in H.R. 527. The remaining 20 percent of crude helium would be auctioned to all qualified bidders in a non-allocated sale. These bidders would include non-refiners and other qualified bidders.

As a condition of participation in the allocated sale, refiners would be required to set aside sufficient capacity for tolling by non-refiners, and these tolling services would be performed at a reasonable price. When a refiner provides tolling services to a non-refiner, it would be allocated a light quantity of crude helium by the BLM in order to be kept whole on its allocated volume.

There are some details and some nuances of how we think this could be structured to work very efficiently to achieve the goals of the bill, and we would be happy to discuss them in more detail. And I thank you for the opportunity to present our views.

[The prepared statement of Mr. Lynch follows:]

Statement of Kevin Lynch, Senior Vice President, Specialty Gases & Helium, Matheson Tri-Gas, Inc.

Chairman Hastings, Ranking Member Markey, distinguished Members of the Committee,

My name is Kevin Lynch, and I am the Senior Vice President of Specialty Gases and Helium with Matheson Tri-Gas, a global leader in the industrial gases industry. I thank you for having this important hearing today, and for allowing me to testify on behalf of Matheson on an issue that so dramatically impacts the global supply of helium.

Matheson was founded in the U.S. 1927, and is now a subsidiary of Tokyo-based Taiyo Nippon Sanso Corporation, which is the fifth largest industrial gases company in the world. Matheson has helium operations within the U.S. in Wyoming, Texas, Nebraska, California, Florida, and Pennsylvania, and we have retail locations in 40 states. We are the sixth-largest supplier of helium within the U.S., and globally.

Matheson is a "Non-Refiner" of helium—meaning that we do not have a helium purification plant connected to the BLM crude helium pipeline system. Instead, we receive our refined helium through transactions with private parties that that are unconnected to the Federal Helium Reserve or the BLM Pipeline.

Therefore, while we are a significant player in the global helium industry, our interests in the debate over the fate of the helium in the Federal Helium Reserve are slightly different from those of some of the organizations represented by my fellow witnesses today. Of course, like all industrial gases companies, we are concerned about global helium supply, and as a good corporate citizen we want a fair and efficient helium market worldwide. However, the fortunes of our company are not tied so directly to the continued operation of the Federal Helium Reserve and the Pipeline System.

We hope this slightly different perspective allows us to look at any proposed legislation through a slightly different prism—not how it affects one company but how it affects the helium industry overall. In our view, any legislation that comes out

of Congress dealing with the Federal Helium Reserve and BLM Pipeline system should lead to a fairer and more efficient helium market worldwide.

As you know, today the operation of the Federal Helium Reserve and BLM Pipeline System is governed by provisions set out in the Helium Privatization Act of 1996.

The 1996 Act has largely achieved its purpose of selling down the Federal stockpile of crude helium, and it has by and large created conditions of stability and predictability in the helium market. On the negative side, the global helium market has developed considerably since the passage of the 1996 Act. Shortages have pushed crude helium prices up globally, and the BLM's method for pricing its sales of crude helium has become detached from global market conditions. The 1996 Act has resulted in the existence of a cost advantage for the four companies buying crude helium from the Federal Helium Reserve for purification in their refining facilities along the pipeline. This represents a significant cost advantage by these helium Refiners, and a significant disadvantage for their competitors. Worse, it means that the American taxpayer is shortchanged as well.

With the legislative authority in the 1996 Helium Privatization Act about to sunset later this year, Congress has a chance to ensure that sales from the Federal Helium Reserve are conducted in a fair and efficient manner following the passage of new legislation. Since the BLM Pipeline System supports two-thirds of world supply with nearly a third of global helium supply coming directly from the Federal Helium Reserve, the new legislation enacted this year will have a profound effect on the global helium industry for at least the rest of the decade.

With respect to the H.R. 527, we offer the following comments.

First, the stated goals of the legislation are to "ensure stability in the helium markets while protecting the interests of the American taxpayer."

Matheson enthusiastically supports both of these goals.

We believe that both of these goals will be advanced through the fostering of greater access by Non-Refiners to the Federal Helium Reserve, which is a concept that motivates several provisions of the bill.

Matheson is also strongly in favor of the increased reporting requirements for the BLM as set forth in H.R. 527. The type of information that the BLM will be required to share more openly is of value to all market participants and should be made available to all industry participants at the same time it is made available to the helium Refiners. Today, important data is made available to the Refiners well before the rest of the industry, thus giving those companies yet another advantage over their industry competitors.

It should be noted that Matheson feels so strongly about these provisions that we included them in the Petition for Rulemaking we filed with the U.S. Department of the Interior in January, 2010. We are pleased to see them included in H.R. 527.

Unfortunately, despite its good intentions, we believe that H.R. 527 as currently drafted subverts the goal of market stability and does not sufficiently address the issue of access by Non-Refiners to the Federal Helium Reserve.

First, about market stability: The global helium industry is built on long-term sourcing and sales contracts with annual escalators and renegotiations that are generally spaced several years apart. Efficient distribution of helium requires investment in very expensive, specialized long-lived assets. In order to plan accordingly, buyers and sellers of helium need to have reasonable assurance that they will have access to helium from their supplier over the duration of a long-term contract.

The auction system proposed in H.R. 527, under which all of the Federal Reserve's crude helium would be auctioned a minimum of twice per year, will create conditions of great uncertainty in terms of helium price and availability. How could a helium user confidently sign a long-term contract with a supplier, if that supplier may lose access to helium or pay a dramatically higher price for it every six months? How could a helium supplier confidently make the investments required in distribution assets and other infrastructure, if that supplier has only a six-month view as to how much helium he will have access to and at what price?

In addition to the concerns about the sales of helium from the Federal Helium Reserve, another fact of the industry is that many of the largest private helium sourcing transactions are linked to the BLM Posted Price for crude Helium. Under the proposed price auction system, the BLM Posted Price would no longer exist, and those contracts would need to be renegotiated.

For these reasons, we believe that the proposed auction system would result in much greater volatility in price and availability, and would be disruptive to world helium markets.

In order to accomplish the worthy goal of increasing access to the Federal Helium Reserve's crude helium stockpile, H.R. 527 attempts to open the bidding to parties

who can demonstrate that they have their own refining capacity or tolling agreements for refining in place.

There are several factors to keep in mind here. First, to be commercially useful, virtually all helium sold into the market must be refined into pure helium. Second, practically speaking, the only companies who are positioned to convert Federal Helium Reserve crude helium into pure helium are the four Refiners who have purification plants linked to the BLM Pipeline. Third, those Refiners will be competing against the Non-Refiners for access to the Federal Helium Reserve crude helium. And fourth, there is no mechanism in this bill that either requires or strongly incentivizes the Refiners to offer tolling services at a reasonable price to companies who are competing against them for access to the Federal Helium Reserve crude helium. This is a significant flaw in H.R. 527.

We submit, therefore, that commercially reasonable tolling deals of significant size will continue to be unavailable to Non-Refiners, and access to the Federal Helium Reserve will remain very strongly dominated by the helium Refiners. This is not the intention of H.R. 527, but it will be its practical result.

Matheson's views on this topic have been shaped from our own unhappy experience with third-party tolling. In 2007, Matheson successfully purchased crude helium from the Federal Helium Reserve. In 2009, we subsequently attempted to purchase tolling services from all four of the helium Refiners and we received "NO BID" replies from each. Therefore, the crude helium that we purchased six years ago still sits in the Federal Helium Reserve and on Matheson's Balance Sheet as an unutilized asset today. Our unsuccessful attempt to secure third-party tolling is what gave rise to our decision in January, 2010 to file our "Petition for Rule Making" with the U.S. Department of the Interior which I mentioned a moment ago.

Another way that the bill seeks to address the issue of access is to state that any party may build a helium refining plant attached to the BLM Pipeline, and gain access to crude helium on equal terms with the existing refining plants. This removes a structural impediment in the current system, which gives privileged allocation of helium to the existing plants.

However, the legislation would not change economic reality. Helium purification plants cost tens of millions of dollars, and generally require a long life to generate acceptable financial returns. They typically take two years to build and commission and it is customary, as part of the investment decision, to have a long-term commitment in hand on a stable supply of crude helium for the facility.

Any party building a new plant to attach to the BLM Pipeline would want to make sure this law was passed before he would begin building. Two years of construction time would put an optimistic on-stream date sometime in mid-2015. At current inventory levels and expected draw-down rates, that may give an expected useful plant life of five years. And, under the proposed auction system, there is a total lack of certainty as to whether the new plant's owner would ever have access to crude helium to refine, and if so, at what price. It is therefore highly unlikely that any new refining plants will be added to the BLM Pipeline which cannot even support the existing installed refining capacity. The existing Refiners will continue to have the only refining capacity on the BLM Pipeline until the stockpile is depleted.

On a positive note, we believe the bill can be improved substantially to achieve the goals we all share. With some adjustments, H.R. 527 can achieve the goals of greater access and market stability, while still generating fair returns for the American taxpayer on the government's investment in helium infrastructure.

The outline of a plan that we think would work looks like this:

- Continue with the concept of Allocated and Non-Allocated sales of Crude Helium, and a Posted Price. The "Allocated" amount of crude helium would be available only to the Refiners.
- The Allocated Sale percentage would be reduced from its current share of the total crude helium to a lower share. For discussion, let's say 80%.
- The Allocated Sale price would continue to be a Posted Price (or Market Price), with the Market Price determined by a robust market survey similar to the one described in H.R. 527. All Refiners buying under the Allocated sale would pay the same price for the BLM's crude helium, as they do today. But the posted price would be much closer to the current market price than the BLM Posted Price is today, ensuring greater fairness across the market and a greater return for the American taxpayer.
- The remaining portion of crude helium would be auctioned to all qualified bidders in a "Non-Allocated" sale. These bidders would include Non-Refiners and other qualified parties. In this example, the Non-Allocated portion would be 20%.

- The results of the Non-Allocated Auction would be considered as data points in the determination of the Market Price.
- As a condition of participation in the Allocated Sale, Refiners would be required to set aside sufficient capacity for tolling by Non-Refiners, who would be eligible to bid on crude helium in the Non-Allocated Sale.
- Third-party tolling services would be performed for Non-Refiners at a price which would allow the Refiners to earn a fair profit while enabling Non-Refiners to obtain pure helium without being priced out of the market.
- When a Refiner provides tolling services to a Non-Refiner, it would be allocated a like quantity of Crude Helium by the BLM during the same time period that the Refiner provides tolling services, in order to be "kept whole" on its Allocated Volume.

This hybrid approach, utilizing both price surveys and auctions, would have several benefits—greater access to the Federal Helium Reserve, a fair return for the American taxpayer, and no disruptions to helium supply. It would ensure that the helium purchased at auction actually gets refined and is brought to market, and it would contribute to a fairer and more efficient global helium market.

We at Matheson applaud the Committee for thinking creatively about how the federal government manages the continued sell-off of the Federal Helium Reserve. We suggest changes to H.R. 527 in the spirit of cooperation. We look forward to continuing our work with the Committee on this important legislation, in order to achieve the goals of fairness and equity—for the helium industry, for the federal government and for the American taxpayer.

Response to questions submitted for the record by Kevin Lynch of Matheson Tri-Gas Inc.

Questions from Rep. Edward J. Markey

1. **Mr. Joyner, Mr. Thoman, Mr. Lynch: The National Academies of Science have recommended that the "BLM should adopt policies that open its crude helium sales to a broader array of buyers" and "negotiate with the companies owning helium refining facilities connected to the Helium Pipeline the conditions under which unused refining capacity at those facilities will be made available to all buyers of federally owned crude helium, thereby allowing them to process the crude helium they purchase into refined helium for commercial sale." Do you believe H.R. 527 would incentivize tolling agreements to refine crude helium between your company and entities connected to the pipeline? Would your company support requirements for mandatory tolling agreements?**

Response from Kevin Lynch, Matheson Trigas:

I do not believe that H.R. 527 would incentivize tolling agreements between Matheson Tri-Gas and the Refiners. In fact, I think H.R. 527 would provide strong incentive for Refiners not toll for us, or for any non-Refiner.

From a practical perspective, the Refiners are the only entities who can convert BLM crude helium, which has little or no commercial value to end users, into pure helium, which is what end users need and will pay for.

Under the proposed auction system, 60% of the crude helium volume made available through auction would be made available only to entities who have adequate refining capacity of their own, or who have secured tolling agreements for refining the crude into pure. Only the Refiners have refining capacity of their own, and only the Refiners can toll crude for 3rd parties. I see no reason at all why Refiners would establish tolling agreements with non-Refiners, thereby increasing the number of bidders competing against them for 60% of the crude helium sold by the BLM. I think that they would refuse to enter into tolling agreements, thus limiting the bidders list to "Refiners only" for this tranche of volume.

Another 20% of the helium made available through auction would be made available to "persons the Secretary determines are seeking to purchase helium for their own use, for refining, or for delivery to end users." In theory, this expands the field of potential bidders to be quite numerous. In practice, I do not think it would expand the field of bidders much, if at all. Once again, the critical component to making this work is the willing agreement of Refiners to toll crude helium purchased by non-Refiners. One could argue along the lines of "Well, if someone else already owns a block of crude and there is no longer competition by and among the Refiners to purchase that block for their own use, the Refiners would surely see it as in their interest to make some money tolling the crude with their spare plant capacity." That would be a very short-term view of the situation, and I believe the Refiners

will take a longer view. The longer view of the situation looks like this: After the first auction, some non-refiners may have purchased some BLM crude helium, which is held in storage by the BLM. Now, those non-refiners want to convert the crude helium into pure helium so they can sell it to end users, and they seek tolling agreements with the Refiners. The Refiners reply with "no bid" responses, or with tolling prices so high as to be the commercial equivalent of "no bid" responses. (As noted in my earlier testimony, Matheson has seen this dynamic play out along these lines already.) Six months later, there is another crude helium auction. By that time, it is known in the industry that non-refiners who win crude helium at auction cannot convert it into pure helium because the Refiners won't agree to toll it for them. Instead, the non-Refiners' crude helium will sit in storage at the BLM, possibly incurring progressively higher storage fees. Since unrefined crude helium is commercially worthless to end users and to non-Refiner sellers of pure helium, non-Refiners will not bid in the BLM crude helium auction. The Refiners will have succeeded in limiting the field of bidders for this tranche of the crude helium to "Refiners only", just as they did with the 60% volume tranche.

A third tranche of 20% would be governed by considerations similar to those applicable to the first two tranches, with a similar disincentive for Refiners to toll for third parties.

Matheson would support requirements for mandatory tolling at commercially reasonable prices—or at least, a much stronger incentive for tolling than what H.R. 527 includes. Our submitted written testimony includes on its final pages a summary of a structure and mechanism that we think would sufficiently incentivize tolling as an alternative to an outright mandate. I refer you to that testimony for more information.

2. Mr. Joyner, Mr. Thoman, Mr. Lynch, Mr. Nelson, Mr. Haines, Mr. Kaltrider: H.R. 527 limits the amount of crude helium any one entity can purchase in a single auction to 30 percent, do you believe that would ensure sufficient competition and auction participation while also protecting against market manipulation?

Response from Kevin Lynch, Matheson Trigas:

I do not think that the provision limiting the amount of crude helium any one entity can purchase in a single auction to 30% would ensure sufficient competition and auction participation while also protecting against market manipulation.

For one thing, I think the definition of "entity" could be interpreted such that, for example:

- Different subsidiaries of the same company could be construed as different entities, each allowed up to 30% of the volume.
- Different joint ventures controlled in whole or in part by the same company could be construed as different entities, each allowed up to 30% of the volume.
- One company could buy 30% of the volume in its own name, and additional volume through one or more third-parties from whom it has contracted to purchase some or all of the crude at cost or at some markup.

There is already a situation in existence that may allow one Refiner access to 60% of the volume under the legislation as proposed.

You may have noticed that sometimes people refer to 3 Helium Refiners, and sometimes people refer to 4 Helium Refiners. The situation is that there are 3 Industrial Gases companies (Air Products, Linde, Praxair) who control the output from all 6 helium refining plants connected to the BLM crude helium Pipeline. Five of those refining plants are owned directly by the Industrial Gases companies who are Refiners [Air Products (2), Linde (1), and Praxair (2)]. The sixth plant is owned by a third party, but 100% of the output is sold by long-term contract to one of the 3 Industrial Gases companies who are Refiners. Depending on whether you consider plant ownership or control of plant output, there are thus either 4 Refiners or 3 Refiners connected to the BLM Pipeline.

Under the rules of H.R. 527, it is unclear to me whether the third-party refiner would be counted as a separate entity, eligible for up to 30% of the helium sold by the BLM, and each of the Industrial Gases companies would also be counted as entities, with each eligible for up to 30% of the crude helium sold by the BLM. Or, would the third-party refiner be considered the same entity as the Industrial Gases company with which it has contracted to sell all of its plant's output of pure helium?

If there are 4 entities involved here under the H.R. 527 definition, then one Industrial Gases company would in effect be eligible for 60% of the volume sold by the BLM. And in that case, I could easily envision the Industrial Gases companies who are Refiners executing some legal transactions to replicate the same structure with other refining plants, in order to increase their allowed purchase volumes.

If there are 3 entities involved here under the H.R. 527 definition, that problem does not exist. However, I do not think the term "entity" is defined to support this interpretation in the current draft of H.R. 527.

In any case, if the 30% limitation goes into effect, I think companies interested in purchasing greater volumes of crude helium will apply their energy in creative ways to form "entities" that allow them access to sufficient quantities of crude helium, such that the 30% limitation is no hindrance to their plans.

The larger point I would like to make is that the real potential for market disruption stems from the implementation of a semi-annual 100% volume auction in the first place. As I discussed in my full testimony, Matheson believes that a 100% volume auction will undermine the stability of pricing and long-term planning in the global helium market. We believe that the newly introduced unpredictability of supply will lead to uncertainty and disruptions for End Users, thereby contradicting one of the stated goals of the legislation, to "ensure stability in the helium markets." I refer to the proposed outline at the end of my written testimony for details about what we believe would be a more judicious use of auctions on a smaller scale, to open up a reasonable amount of access to BLM crude helium to non-Refiners and to provide input into the pricing of BLM crude helium.

Mr. LAMBORN. OK, thank you for your testimony. We have just heard from the three distributors. Now we will hear from the three refiners.

Mr. Nelson.

STATEMENT OF WALTER L. NELSON, DIRECTOR, SOURCING AND SUPPLY CHAIN, AIR PRODUCTS AND CHEMICALS, INC.

Mr. NELSON. Mr. Chairman, Ranking Member Markey, Mr. Holt, and members of the Committee, thank you very much for the opportunity to participate in this important hearing. My name is Walter Nelson, Director of Helium Sourcing at Air Products, a global industrial gas company and the largest refiner of helium on the BLM pipeline system.

For the record, I applaud the Committee for recognizing that maintaining access to the BLM's helium reservoir is very important to commerce. And with that, I would like to summarize my testimony by focusing on four key points.

First, we don't own the gas fields or operate the natural gas plants that feed the helium into our refineries. Energy companies in that business extract the helium from natural gas. If the price of natural gas is low, and they slow production, or if there are outages at their plants, we are at their mercy. And it is for this reason that we are experiencing a helium shortage today.

We understand the desire in Congress to do something to address the current helium shortage. But please understand that this legislation, or really, any legislation, will not do anything to bring additional molecules of helium onto the market.

Second, most of our customers think of helium like a utility. Reliability and certainty of supply are paramount. Helium is indispensable to them. Think of energy-intensive industries: steel, aluminum, cement, chemicals. Their source of electricity is indispensable to them. Now, imagine that those industries did not know from one 6-month period to the next where their power was coming from, or from whom, or how much it would cost, or whether it would be there when they needed it. That is exactly the predicament customers—helium customers—would be in if this bill were to become law.

There is more to the analogy. These companies don't really need to know how the power plant operates, or the type of fuel, or how the transmission lines work. They just need to know the light comes on when they flick the switch. Our helium customers are the same. They don't need to know or understand the process of refining helium, how the pipeline allocation works, or the conservation flywheel aspect of the BLM, or how the in-kind program ensures reliability of supplies for scientific research. But we do. We live with these critical intricacies all the time.

We would not do anyone in Congress or industry any favors by staying silent in the face of legislative proposals that we are convinced would be unworkable in practice, and that would introduce supply uncertainty that would put Federal agencies and helium in real jeopardy.

We fully support the goal of Congress to sell the remaining helium in the Federal reservoir at a market price. But we believe the proposed 100 percent auction will be disruptive and will negatively impact the reliability of supply to end users. We think you can get there another way.

Today BLM sells most of its helium to the refiners as allocated volume. BLM sells the remainder to anyone who holds a BLM storage contract as the non-allocated volume. We see the wisdom of auctioning off the volume of helium that is non-allocated. Such an auction would indeed harness market forces. And the price of the winning bid could be used in conjunction with a comprehensive market survey to establish the BLM's price for allocated helium. This would give the best of both worlds, using the benefits of free market, but not interfering with our ability to act like a utility for our customers. Because it is the sanctity of our contracts with the BLM that in turn allows us to enter into long-term supply agreements with end users. And it is those guarantees that, in turn, allow end users to have meaningful production plans. Without that reliability, the entire system which underpins the U.S. economy starts to fall apart.

Third, the bill speaks in many places about the process for selling helium, but there is less focus on delivering refined helium. And it is the refined helium that keeps our customers humming. It is crucial in any legislation that the system for selling and delivering helium be married, and that there are not many people outside the helium industry or the BLM that understands this complexity.

But unless the legislation takes account all of these dimensions, what happens in the event of refinery outage? Who assures the DoD supply for scientific researchers? That process for delivering helium that is already remaining in storage? As introduced, we are convinced this marrying of selling and delivery, does not square up.

Finally, I recommend that you not include forced tolling in the bill. We have heard this argument before. Congress needs to force those of us who invested millions in refining capacity to refine helium for companies who did not, bailing them out of their consequences of their decision not to build a refinery of their own. To us, that would be as if Hyundai came before Congress and said, "We like selling Hyundai cars, but we would rather not invest in a Hyundai manufacturing plant. So, please, Congress, tell GM in

statute that they must use some of their manufacturing capacity to build cars for us so we can sell them." That would be a laughable idea, right? Well, we think a similar response is warranted here. The Congress does not think much of bailouts, and this legislation is no time to alter that attitude.

And let me wrap up with one closing remark. Letting the BLM helium reserve become off limits would be a major problem. But because we know the BLM system so well, we think it would also be a problem to enact legislation that is bound to have snags which will lead to uncertainties that our customers do not expect from their utilities, and should not expect from us.

Mr. Chairman, thank you for calling this hearing. I look forward to your questions and the opportunity to work with the Committee to get this right.

[The prepared statement of Mr. Nelson follows:]

Statement of Walter L. Nelson, Director, Helium Sourcing & Supply Chain, Air Products and Chemicals, Inc., Allentown, Pennsylvania

Introduction

Mr. Chairman, Ranking Member Markey, and members of the Committee, I appreciate the opportunity to testify before you today. My name is Walter Nelson, Director of Helium Sourcing and Supply Chain, at Air Products, based in Allentown, Pennsylvania, a global industrial gas company, one of the leading suppliers of helium worldwide and the largest refiner of helium with connections to the BLM pipeline system. Air Products is pleased to have the opportunity to contribute its views on helium and H.R. 527.

We applaud Chairman Hastings and Ranking Member Markey for recognizing that maintaining access to the BLM's helium reservoir is so important to commerce. We appreciate the chance to share our expertise with the widely shared goal of prudent, effective legislation that represents a good deal for the taxpayer and for the U.S. economy.

While we understand that auctioning off all the helium may be sensible as a theoretical matter, we believe that implementation will cause a level of uncertainty among end users that will be far more disruptive than any inconveniences they have experienced to date. Alternatively, a partial auction of the non-allocated volume of BLM helium would, in our view, optimize the return for the taxpayer without hampering some of the biggest names in manufacturing, federal users, and the scientific community.

Air Products and its background in the helium market

Air Products, with revenues of roughly $10 billion per year, is an American corporation with a global industrial gas business. The company provides hydrogen for oil refineries so they can produce clean-burning gasoline, hydrogen for fuel cell cars and buses, liquid hydrogen for NASA's space launches, oxygen for patients in hospitals and to steel mills for use in blast furnaces, nitrogen to enable the manufacture of computer chips, and helium for MRIs and semiconductor manufacturing. In short, its core business is helping major industries operate more cleanly and efficiently. Air Products has more than 20,000 employees in 50 countries.

Air Products is one of the leading suppliers of helium worldwide, and the largest refiner of helium on the BLM pipeline system. Just to be clear, helium is a byproduct of natural gas. We don't own the gas fields or operate the natural gas plants. Energy companies in that business extract the helium, and it's through our refineries that we supply helium to a wide range of manufacturers. The Company's equipment processes more than half of the helium extracted from the earth globally, and it has pioneered many of the processes critical to getting helium from the ground to vital customers, such as extraction, production, distribution, and storage technologies used in the helium industry today.

Air Products has experience second to none. That expertise was recognized by virtue of the United States government's selection of Air Products to engineer and construct the first helium extraction units when the federal government began its helium conservation program in 1959. More recently, Air Products designed and constructed the helium enrichment plant in 2002 that supplies the Bureau of Land Management's helium pipeline system, which continues to operate to this day.

Air Products decided to build its first helium refining plant over 30 years ago in the northern panhandle of Texas. The plant, designed and built by Air Products with proprietary technology, was first operational in 1982, expanded in 1985, upgraded in 2010 and continues to operate to this day. Air Products subsequently constructed two more helium refining plants adjacent to a third party natural gas processing plant near Liberal Kansas. The first plant started production in 1991 and the second plant, when completed in 1999, was the largest helium refining plant in the world. In 1995, Air Products became the first company to design and build a helium refining plant that used crude helium that had been extracted during the production of LNG (liquefied natural gas). More recently Air Products, through a joint venture with Matheson, constructed a helium refining plant in Wyoming. This plant was completed in 2011 and it is expected to begin production later this year when our supplier's natural gas plant becomes operational.

In short, Air Products is one of the most experienced operating companies in the world to have designed, built, and operated large commercial helium refining plants. That said, there is nothing stopping any company from building its own helium refining plants near the Bureau of Land Management's pipeline system in the United States, and indeed, several companies have done just that.

Where does helium come from?

Growing up, we never had to think about helium. It is at the party store if we want balloons. We see the helium-filled blimps at sporting events. Supplying helium, however, is anything but child's play. On earth, helium is found in natural gas, and in only a few spots on the planet does helium exist in high enough concentrations to make it worthwhile to separate it from the natural gas.

There are no naturally-occurring underground reservoirs of pure helium. Helium is a rare gas and it only forms in locations where the radioactive decay of uranium occurs with the formation of natural gas. Not all natural gas fields contain helium; indeed, most do not. The largest natural gas fields that are known to contain helium, other than in the United States, are in Algeria, Qatar, Australia, Iran and Russia.

It is essential to keep in mind that no oil and gas extraction company goes out looking just for helium. No one! Helium is a unique commodity for this reason. There is little correlation between price and supply. We have been told that owners of LNG plants can make more from LNG sales in less than a day than they would make in helium sales in a year—a 400 to 1 ratio. Even if legislation resulted in the price of helium rising ten-fold—certainly nothing our customers think would be a positive development—that would have little bearing on the interest of large gas companies doing anything they are not doing today to identify helium reserves. Their gas fields are multi-billion dollar projects, and helium plants are a tiny part of them. They will not let the tail—or in our case the tip of the tail—wag the dog, so we are at their mercy for developing new helium projects.

Fortunately, in the case of Air Products, we are doing just that. We have a joint venture with Matheson in Wyoming. We have already built our helium refining plant, but because the operators of the gas field have yet to complete construction and otherwise have not gotten their production system in final form, we have had to bide our time since our own plant was ready to be put into service over a year ago. This is a reminder that much as Congress wants to do something about the helium shortage—caused by outages and delays in bringing new plants on line—the single thing that will precipitate more helium being found is a higher price for natural gas.

Air Products' role, like that of other industrial gas companies who are helium refiners, is to purchase crude helium from energy companies that are extracting it from natural gas, as well as to purchase helium from the federal government. Helium refiners purify (clean up and remove contaminants), liquefy (cool to minus 452 degrees Fahrenheit so that the gas takes liquid form) and then transport and sell helium into the global retail market. Once helium is extracted, purified, and liquefied, it has a short shelf life of only 45 days before it begins to warm up and turn back into a gas, so Air Products has developed transportation technologies necessary to transport the liquid helium from the refining plant to market. Gardner Cryogenics, a division of Air Products, has designed and constructed most of the liquid helium transportation and storage equipment used by the industry today.

For Air Products and every other industrial gas company in the United States, BLM's pipeline and storage system are an integral part of this global supply chain and infrastructure. Disrupt the BLM's pipeline, and it would be as if one-third of the world's supply of oil was instantly pulled off the market—chaos would ensue, and the price, in this instance specifically for helium, would skyrocket.

End users view helium akin to a utility

We ask the Committee to consider some essential facts. To our customers, helium is like a utility. Just like major electricity customers do not have to give much thought to how power is generated—they don't need to know about the fuel source or the power plant or the transmission lines, they just need to know the power is available when they need it—our customers have not had to know the helium business. All they have needed to know is that the helium is there when they need it, so they can manufacture their products on a just-in-time manner. They are entitled to their views on the wisdom of any legislation, but we feel a responsibility to make sure that whatever Congress does will be workable for end users from day one. Because, if it's not, we, and more importantly our customers, will experience intolerable disruptions. Because we understand the BLM system, and the implications of H.R. 527 or any other legislation, we feel an obligation to identify the implications in the real world. For us to instead stay silent in the face of a total overhaul in the way helium moves from the ground to our customers, one that introduces needless risk, seems unwise. We trust that this Committee will understand our recommendations in this light.

The Federal Helium Reserve is essential to a stable helium market

BLM today operates as a natural gas producer at the Cliffside field, where it extracts natural gas from wells, separates the gas, and then sells the natural gas and helium to private industry. BLM produces approximately two billion cubic feet of crude helium annually, which is about 30 percent of the worldwide supply. The BLM system consists of the Bush Dome, an underground storage reservoir where the United States government stockpiled helium during the conservation period and into which companies that have refined helium can deposit the helium until it is used; together with 29 natural gas wells that are used to extract natural gas from the ground and a gathering system of pipes which connects all the wells together; a helium enrichment plant to process the gas; and a 450 mile crude helium pipeline system that extends from northern Texas across the panhandle of Oklahoma and into Kansas.

The crude helium enrichment plant is operated by the BLM, but the plant is owned by an entity called the Cliffside Refiners Limited Partnership (CRLP), a partnership made up of helium refiners that owned facilities on the BLM pipeline in 2000. The CRLP partners include Air Products, Praxair, Linde (formerly the British Oxygen Company), and Colorado Industrial Gas (formerly owned by El Paso Energy and recently acquired by Kinder Morgan). The CRLP was formed in July 2000 with the charter to support the federal government in fulfilling the requirements of the Helium Privatization Act of 1996. The CRLP invested over $26 million at the Cliffside field to fund design and construction of the crude helium enrichment plant. BLM operates the CRLP-owned plant today, enabling the sale of government helium and natural gas (methane, in this case) to private industry. The CRLP companies were honored for excellence by the Secretary of the Interior in 2004.

The BLM pipeline infrastructure today supports private industry by connecting six private crude helium extraction plants and six private liquid helium refining plants to the BLM's reservoir at Cliffside. Without this pipeline system, private industry would not be able to efficiently deliver crude helium from the extraction plants to the helium refining plants in the region. The BLM pipeline system and the private industry helium plants together supply approximately two-thirds of the worldwide helium supply.

What is causing the helium shortage, and when will it end?

We estimate that helium production worldwide was operating in excess of 95% of capacity in 2011. Production was just sufficient to meet global demand; however, any blip in supply caused by a planned or unplanned outage anywhere in the world would have an immediate impact on the market by tightening up supply.

Beginning in late 2011 and continuing thus far in 2013, the industry has seen crude helium supplies decline; at the same time there have been disruptions affecting most of the world's helium refining plants. These supply disruptions have been caused by many factors primarily outside the control of the helium refiners, resulting in reduced helium supply to consumers. In the United States we have seen a decline in helium production as energy companies focus their drilling plans on natural gas that is rich in liquids rather than the dry gas which typically has more helium.

There have been planned and unplanned maintenance outages at natural gas processing plants, as well as continuing pipeline allocations on the BLM system during well maintenance that have restricted the supply of crude helium to the U.S. refiners. In Algeria and Qatar, production of helium has decreased due to the fragile

worldwide economy, as well as maintenance work at gas plants. In addition, new helium refining projects have been slow to develop.

Helium supplies will continue to remain tight through 2013 and into 2014, until new helium production begins in Wyoming, Algeria and Qatar. The Wyoming project is expected to add an additional four percent to worldwide helium capacity, Algeria two percent, and the Qatar II project may add up to 18% capacity. Only after these three new plants are operational and existing plants are back running at full output will the global supply begin to fully stabilize.

This recent history of supply problems proves one thing: if the BLM system is off limits as soon as 2013, current shortages will be considered modest compared to the dire situation that helium users will face.

A 100% auction of BLM's helium may seem fine in theory, but we have concerns about it in practice

H.R. 527 is very much a step in the right direction compared to the discussion draft that was circulated in December 2012. Still, a 100% auction represents a major change from the status quo, and introduces tremendous risk for our customers. Today, helium customers know that helium will be delivered when they need it. In a 100% auction world, all bets are off. We understand the desire of the Committee to assure continued reliability of helium supplies, but no one has a crystal ball. No one can forecast, with certainty, who might bid for what, and therefore there is no certainty that helium will be the "utility" that our customers think of it as, today. Our comments, therefore, are offered because we know the Committee wants to get this right. Our concern is that there is no guarantee that we will avoid significant delivery disruptions, traceable to this legislation, if the bill were to be enacted. That is why we continue to seek considerable changes in the legislation.

It is also very important to point out that this legislation (or any other) will not make more helium molecules available for end users. Almost like "squeezing a balloon", a 100% auction of BLM helium will redistribute the declining supply—simply creating supply uncertainty for end users without any upside potential for increased molecules. This uncertainty will serve to reduce effective supply to end users as all points in the value chain will need to be more conservative with their inventory management and scheduling.

H.R. 527 will require new or amended BLM helium contracts. Actually, our current BLM helium purchase and delivery contract (Storage Contract) does not expire until October 1, 2015, so any new system implemented prior to that date would require the U.S. Government to either renegotiate and amend that contract, or break it. Breaking these contracts could create a legal mess, potentially causing disruptions within the helium supply chain. That said, BLM should be able to develop new regulations and contract amendments between now and then.

Providing sufficient time to change the system and implement an auction is crucial

H.R. 527 as written delays the effective date for the initial auction until one year, and potentially up to one and a half years, after the date of enactment. While we still have concerns about whether all the bugs will be worked out by then—we know that BLM conducts auctions of various things, but crude helium has unique characteristics quite different to typical commodities subject to a standard BLM auction—it is important to have as much time as possible to perfect the auction and delivery mechanisms. The risk of an imperfect system is that crude helium will not be reliably delivered or refined and put into commerce in a timely manner. If there are flaws in the system, and the helium cannot be delivered, U.S. manufacturers will pay the price. We believe that the optimal system would call for any new method for selling BLM's helium to be implemented coincident with the expiration of the current contracts between the BLM and helium refiners in October 2015.

We fear perfection being the enemy of the good

Indeed, we have larger concerns that we are coming to the end of the "useful life" of the BLM helium reserve, at least for commercial purposes. As the chart attached to my testimony depicts, by the time H.R. 527 is to be fully implemented, BLM helium would be well down the steep and immutable decline curve. There would not be that many years' worth of commercial helium supplies as of then. We are concerned that we may be letting perfection be the enemy of the good here. "Perfection" would be some optimal price for the taxpayer. In the interest of achieving that, however, we may be causing instability regarding supplies for high-end manufacturing that will be destabilizing for those companies, and for the broader U.S. economy. "Good" is the ability to receive a market price for helium while maintaining a reliable supply of helium from the BLM reserve to our customers.

While we understand the desire to improve on the 1996 Act, it would be unfortunate if we took a step backward with regard to the reliability that has been essential to so many large helium-dependent manufacturers, companies whose names are synonymous with success in the U.S. With so many risks facing the economy that we cannot control, this, which we can control, feels like a needless risk to us. That is why we think Congress should do everything it can to optimize price so that the taxpayer gets optimal return, but in balance with the effects on the helium-dependent customers being given suitable weight.

Existing helium inventory in storage and priority for delivery must be addressed

Regardless of whether the BLM helium is sold through an auction, a sale of allocated amounts as is the case today, or a combination of the two, there are a lot of moving pieces that need to be harmonized to make the system work, including assigning volumes to be owned and refined, applying storage charges, and penalties for non-delivery. For H.R. 527 to function without risk to end users, it will require new regulations, contracts, measurement systems, accounting and management, but these are not addressed in the legislation. Any new legislation must establish the rules for determining the priority of helium delivery from inventory in storage. Today there is about a one year's supply of privately owned helium already in storage. We recommend that Congress establish pipeline delivery protocols and implement the well established inventory accounting practice of FIFO (first in—first out) for the delivery of helium from storage. The first helium purchased has priority for delivery based on the capacity constraints of the system.

An annual auction would pose less risk to end users than a quarterly or semi-annual auction

Moving to a semi-annual auction, a change from the discussion draft to H.R. 527, is preferable to a quarterly auction, but we think an annual auction would be even better. Why? Because a quarterly auction, which would effectively represent a spot sale and would not provide the certainty and reliability of supply that manufacturers need. It would also create stresses on the supply chain, where on a quarterly basis manufacturers would have to adjust plant operations, inventory management and logistics activities. The molecule uncertainty will cascade through all these subsequent steps between the BLM and end users, who will not enter into contracts on a quarter to quarter basis. Helium end users insist that reliable long-term supply contracts are essential to their current business models. For the most part, the same is true for semi-annual auctions as well. If they could not know, from one half year to the next, where their helium would be coming from, they could not develop predictable business plans. We believe, however, that while a semi-annual auction is better than quarterly, an annual auction of the non-allocated helium provides the highest level of reliability and product supply certainty to end users.

The Secretary needs the greatest possible discretion to avoid market disruption and to assure legitimate purchasers of BLM helium

We applaud the discretion given to the Secretary to adjust the percentages to be auctioned so as to minimize market disruption while maximizing revenue. While we understand the objective of having bidding that is as active as possible, so too must Congress take full account of the need of helium end users to know they can get helium when they need it. The leeway provided to the Secretary in this regard is essential to sensible implementation of any auction.

The provision in H.R. 527 that limits any one entity from purchasing more than 30% of the helium in an auction will, we believe, prove to be unworkably low. The purchasing limit should be raised to no more than 50%, along with the stipulation that the Secretary has the authority to adjust this limit accordingly to adapt to changing market conditions.

Insisting that only qualified bidders, those with a demonstrable stake in the helium market, with the ability to receive the helium, be able to engage in the auction process is another improvement in H.R. 527. We have concerns that speculators might see helium as the latest commodity that falls prey to investment instruments that would curl one's hair. We do not want an arbitrageur or a sovereign wealth fund to be able to have standing to bid. Taking every step possible to guard against that is critical.

Selling and delivery of helium must be harmonized, and the In-Kind program should not be jeopardized

As we enter the sunset phase of life for the BLM reservoir, where the amount of deliverable helium is declining at rates of 15–20% each year, the BLM must adapt its sales methodology and only offer for sale each year the amount of helium

that can actually be delivered from the reservoir to consumers. This decline curve tends to exacerbate problems with a 100% auction. For example, a 100% auction is inconsistent with the federal In-Kind program, which provides essential helium to researchers and federal agencies. Today, helium refiners essentially "loan" helium to the In-Kind program for six to nine months. But without any certainty that helium refiners will have helium from one auction to the next, this "loan" will no longer be a certainty, exposing federal agencies to great risk. Worse, as the volume of BLM helium declines, there will be inevitable conflict between the In-Kind program and the bids by private companies for scarce BLM helium. An auction of nonallocated helium together with allocated sales can address this important objective, but that it is almost impossible for a 100% auction to be workable in this regard.

The auction is also inconsistent with the so-called helium conservation "flywheel" that allows refiners to inject helium back into the BLM storage system during refining plant outages or during periods of excess global supply, rather than venting precious helium molecules to the atmosphere. If 100% of the BLM helium is auctioned, and if the auctioned helium is given first priority for delivery through the pipeline, we are concerned that we will have a hard time accessing the helium that we have conserved by re-injecting into the system. We believe a partial auction combined with an allocated sale, married to rules for pipeline deliveries, can address this concern.

A major possible snag that we urge the Committee to avoid is a disconnect between the sale of helium and its delivery. Think of helium from the BLM reservoir as if it were water moving through a garden hose that was left running until the well ran dry. The winner of any auction would need to fill up its pail from that hose and then have its pail replaced by another winner's pail, and so on. In a 100% auction, the winners would need to take delivery of their helium prior to the next auction. Otherwise the bid winners would risk never being able to take delivery. Today, there is the ability to store helium because the refiners are not gambling on whether there will be helium available from one auction to the next, they purchase the helium that is offered for sale and then take regular deliveries of the helium to satisfy demand.

New reporting requirements are an intrusion of privacy

H.R. 527 imposes many new and comprehensive reporting requirements for the BLM, the owners of the helium enrichment plant, and the private refiners connected to the BLM pipeline system. While we agree that governmental proceedings should be as transparent as possible, these new reporting requirements create bureaucracy, will increase costs, and intrude on private, confidential business planning.

Our helium refining plants are constructed adjacent to private natural gas plants (literally across the fence line). They are not dedicated exclusively to the BLM system. We have entered into long-term contracts with private natural gas producers under which we purchase all of the helium they may produce as a byproduct of natural gas production. We have constructed, installed and dedicated sufficient refining capacity at these plants to support these long-term contracts to ensure that we can receive and process all of the helium they produce today or into the future. Requiring the private refiners to report production, production capacities, future capacities and other commercial transactions unrelated to the purchase of crude helium from the BLM, and then posting that information on the Internet without restriction, is an intrusion of privacy that must not be legislated. There must be far less intrusive ways for Congress to understand how much refining capacity is available, especially since the amount of BLM helium is declining so rapidly.

A partial auction of the BLM helium accomplishes all important objectives

As the discussion around BLM helium has unfolded, there have been several important objectives that have been identified: (1) assuring transparency around how BLM sets a price for helium so it is no longer a "black box; " (2) optimizing return for the U.S. taxpayer on the sale of helium; (3) assuring reliability of supplies so that end users can enter into long-term contracts; and (4) providing an incentive for refiners to enter into tolling agreements, to refine helium purchased by nonrefiners. It is our view, based on experience with the BLM system, that auctioning off the nonallocated portion of BLM helium is the best method for achieving each of these objectives in a way that does not compromise any of them.

We recognize that various independent sources have concluded that BLM is not charging high enough prices for its helium. While we think there is considerable evidence that undercuts this conclusion, we are prepared to stipulate that higher prices for the taxpayer are a legitimate objective for Congress. To us, the way to accomplish this is for full transparency regarding how the BLM arrives at its price. That includes a thorough market survey, outside experts with the statistical and eco-

nomic expertise that BLM may not have, and the added component of a price to be derived from the auction of the nonallocated amount of helium the BLM currently puts on the market for purchase by nonrefiners.

This has several advantages. Provided there is pipeline allocation dedicated to the auction of this nonallocated amount of helium, there will be fierce competition among bidders for this volume. Whether bidders are end users or nonrefiners, if there is pipeline allocation associated with this auctioned amount, there will be new competition and a change from the status quo that will undoubtedly prompt helium refiners to compete aggressively for that business. Tolling contracts between the parties, when commercially necessitated, will be facilitated naturally.

But if there is no pipeline allocation, tolling is not an attractive enterprise. Imagine if a Burger Company A set up shop next to Burger Company B, and asked Company B to fry up burgers for Company A, so that A could sell them to its own customers. A would pay B for its efforts, but that would not be a good business proposition for B, allowing A to sell burgers to more of A's customers, increasing A's market share at the expense of B. Perhaps A could pay B a high enough price to fry those burgers to make it worth B's while, but that price would have to be high enough to compensate B for losing market share. Some nonrefiners are willing to pay that price for tolling agreements today, but some are not.

Auctioning off only the nonallocated portion also provides certainty to helium end users. They will have the assurance that comes with long-term contracts, which themselves are predicated on contracts between refiners and BLM. They could continue, indeed, to think of us as a utility. The alternative—uncertainty about who will get helium from where, and how timely, each time the auction is conducted—is hardly a system upon which Fortune 500 companies, as well as the federal government and leading scientists, can predicate their enterprise.

Legislation should not mandate allocations or tolling of helium, which is a bailout for companies that did not invest in their own refining capacity

Some have been heard to argue that BLM has set up what is essentially an oligopoly, and that Congress, in statute, should therefore force refiners on the BLM pipeline to allocate a percentage of their refining capacity to process helium owned by non-refiners, at set fees. The answer to this is simple: any party can negotiate to buy helium from a refiner, but Congress should not insert itself into the middle of commercial transactions. Commercial arrangements are entered into all the time that allow those without helium refineries to buy agreed-upon quantities of helium from those that do have refineries. These are referred to as tolling arrangements. But surely it is not the role of Congress to pass statutes that force refiners to sell at a set price, or to force refiners to share their substantial investment in refining capacity with companies that have made their own strategic choice not to build their own refinery.

The refiners made enormous investments at the time they built refineries on the BLM pipeline. Several industrial gas companies chose not to make such an investment. Those industrial gas companies that chose not to make similar investments presumably made what to them were sound business decisions, and spent their capital elsewhere. For Congress in 2013 to give those companies the ability to force the refiners to sell at a set price would be totally un-American and contrary to the basic principles of capitalism. Nothing in law stands in the way of any company entering into a tolling arrangement at a mutually agreed-upon price.

Consider the analogy of a small petroleum company, lacking its own refinery, but looking to get its hands on petroleum out of the Strategic Petroleum Reserve and getting that to market as gasoline. If that small petroleum company petitioned Congress to force the large oil company, in statute, to use some of its refining capacity to process petroleum of its competitor, no one would conceivably take this position seriously, and it has no more merit in the context of helium. Of course, the small petroleum company could negotiate with the large oil company to have its petroleum refined at its plant. This has happened for years in the helium context. But forcing refiners to use scarce capacity for a competitor in statute? No one could possibly think this is an appropriate role for Congress.

We have used another analogy as well to explain why we oppose the idea that Congress should force refiners to toll for nonrefiners, at a price set by Congress. Suppose that a small foreign car manufacturer approached Congress with the following proposition: we like selling cars in the U.S., but we would rather not invest in building the manufacturing plants that would allow us to make these cars, so Congress should force a large American manufacturer, at a price set by Congress, to use some of its manufacturing capacity to build cars for the foreign company. A laughable proposition, right? Yet that is what we hear some nonrefiners asking of Congress. Those of us with refining plants invested millions of scarce dollars at a

time when the nonrefiners invested elsewhere. It appears that they now regret this decision. They could build a helium refinery on the BLM system today, and H.R. 527 quite explicitly provides that there is no barrier to this investment, and that they would be eligible for an allocation for BLM helium should they do so. But instead of doing this, they are asking Congress to bail them out from the consequences of a business decision they made many years ago, and by forcing a private party to toll for them at a price to be set by Congress. We doubt that there are many members of this Committee who thought that imposing federal price controls on a private industry was a desirable public policy when they ran for Congress. Congress should not take this idea seriously. This House objects to bailouts, and forced tolling would represent the ultimate in bailouts.

The 1996 Act did not restrict access to the BLM pipeline or impose restrictions on who could purchase helium from the federal government. Any third party company that wanted to enter the helium refining business and purchase helium from the federal government could have made investments as early as 1996, and could do so to this very day and into the future. Surely, it is not the role of Congress to turn back the hands of time and allow companies that opted not to make such investments to enjoy the benefits accruing to those who did.

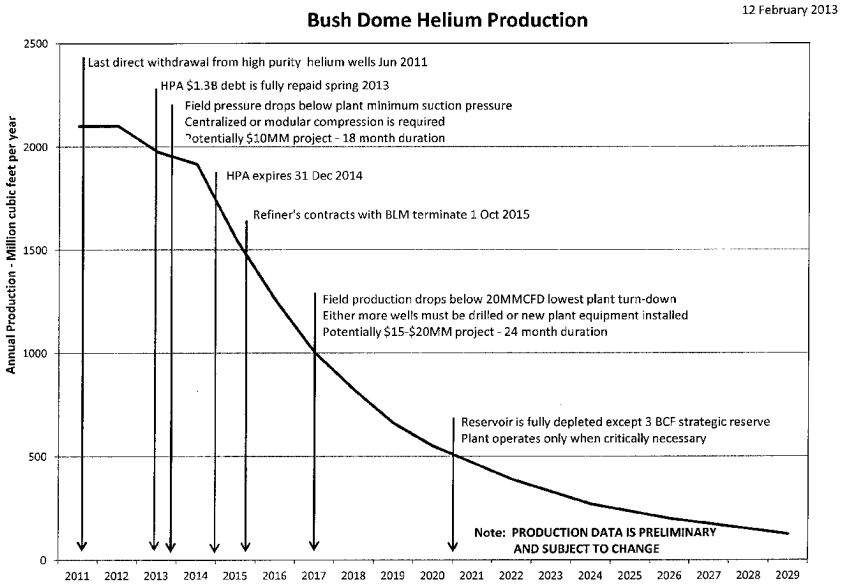
The 1996 Act does not impose any restrictions on who can purchase helium from the federal government. Instead, the Department of the Interior, under Administrations of both parties, limits the sale of helium from the federal reservoir to what it calls "qualified buyers"—an entity that must have the ability to receive and process the crude helium sold by the government. Any company can enter the helium refining business with the requisite commitment of its resources. BLM's interest in selling to qualified buyers is to prevent companies from stockpiling crude helium. BLM determined that helium refiners were in the best position to process the crude helium, which requires purification and liquefaction prior to being introduced into the helium wholesale or retail market.

Interestingly, BLM initially offered 90 percent of the helium in the reservoir to the refiners and left 10 percent as unallocated, to be purchased by companies that were not refiners. But there was very little demand for the unallocated portion. Since BLM's desire was not to sit on unnecessarily large quantities of helium in the reservoir, BLM raised the allocated amount to 94 percent. Any suggestion that this level poses an obstacle to any company wishing to purchase helium for its customers simply does not comport with the facts. The 1996 Act and any successor statute does not and should not set the allocation level; BLM does, and for reasons that benefit the U.S. taxpayer and the users of helium.

Conclusion: The time for Congress to act on helium is now

We are encouraged to see action on the helium issue. This is not an issue where Congress can kick the can down the road or take action retroactively. There will be serious consequences to the American economy if the BLM reserve is off limits after the end of the current fiscal year.

There is no need whatsoever to let this happen. This issue has been bipartisan in both bodies of Congress over the past year, and there is no reason that Congress cannot develop a workable, sensible bill that accomplishes the objectives that congressional leaders have identified. Air Products appreciates the opportunity to testify again on this issue, and will do everything we can with our know-how to advise Congress along the way to an outcome that everyone can be proud of.



Response to questions submitted for the record by Walter L. Nelson, Air Products and Chemicals, Inc.

Questions from Chairman Doc Hastings

1. **Mr. Nelson, the Government Accountability Office produced a chart showing the price of BLM crude helium selling at just under $80 per thousand cubic feet, while the price of Grade A refined helium sells for approximately double that—$160 per thousand cubic feet. Please provide the committee with an estimate of the average price per thousand cubic feet of the last 5 helium contracts you have negotiated or renegotiated to sell crude refined helium.**

H1A: I am not familiar with the source of data used by the GAO to create the chart depicted in Figure 2 on page 8 of GAO–13–351T, however I believe the chart is misleading and inaccurate. It is impossible for the price of Grade A refined helium to be less than the price for crude helium as shown in this chart. The price of Grade A refined helium must always be higher because it includes crude helium storage and delivery charges, plant investments, processing costs, labor, energy costs, distribution equipment investments, transportation and logistics costs, fuel, taxes, permits, etc. The U.S. Government defines Grade A helium as 99.995% or better purity, however the cost/price of Grade A helium is largely dependent on whether the helium is sold as liquid or gas and the type/size of delivery container, as well as the transportation charges to/from the delivery point. Undoubtedly there is a product mix effect which makes it impossible to draw any conclusions from this chart. Air Products does not sell "crude refined helium", however in accordance with our response to the Governments IFO NO. BLM–2012–OMCHS–001: Air Products provided the BLM with our FY2011 average annual sales price for refined helium (FOB) for volumes in excess 1 million cubic feet and that price is below the $160/Mscf.

2. **Mr. Nelson, is the GAO estimated price an accurate reflection of the price of Grade A refined helium?**

H2A: Air Products cannot vouch for the GAO estimated price. We do not know the basis for the GAO's estimate. Federal agencies procure helium every year, so the Committee should have no trouble obtaining the price paid by the various agencies and departments that use helium. Like any other commodity that is in short supply, the price of refined helium can fluctuate and depends on several factors, in-

cluding the volume sought, the immediacy of delivery, and the history of commercial relations between the parties buying and selling helium.

3. Mr. Nelson, please provide the Committee with a list of the refined helium products (grade) you produce from the federal helium reserve? In each category, please provide some estimate of the current market price for each product.

HA3: A complete list of helium products, specifications, container sizes and delivery options can be found on the Air Products website at: http://www.airproducts.com/products/gases/helium.aspx. As noted in the answer to the answer to question 2, there are many factors that enter into the price for helium, including the relative supply and demand at the precise moment of the transaction. Long-term prices are not the same as spot prices, for instance. We negotiate prices with our customers frequently, and this information is proprietary and confidential. Federal agencies themselves procure all grades of helium. We encourage the Committee to obtain this information from these agencies.

4. Mr. Nelson, the Committee is interested in understanding the capital costs related to the refining and distribution process. Could you please provide the Committee an estimate of your refining costs at the BLM connected facilities on a per thousand cubic foot basis? Could you please provide the Committee an estimate of the cost of distribution related to the products produced at the BLM facility on a per thousand cubic foot basis (if it can be broken down for different products or grades of product please provide that information)?

H4A: Air Products has invested hundreds of millions of dollars in our helium business to construct helium refining plants and the supply chain infrastructure to support the business. Air Products began making capital investments in connection with the BLM pipeline system over 30 years ago. Our first refining plant was first operational in 1982, expanded in 1985 and upgraded in 2010. Air Products subsequently constructed two more helium refining plants adjacent to DCP (Duke/Conoco/Philips) Midstream's natural gas processing plant near Liberal Kansas. The first plant started production in 1991 and the second plant in 1999. In 1995, Air Products partnered with Sonatrach in northern Algeria, and became the first company to design and build a helium refining plant that processed crude helium that had been extracted during the production of LNG (liquefied natural gas). More recently Air Products, through a joint venture with Matheson, constructed a helium refining plant in Wyoming. This plant was completed in 2011 and it is expected to begin producing helium later this year when our supplier, Denbury Resources, begins production at their new natural gas plant in Riley Ridge Wyoming. Air Products made investments in the CRLP to construct the $26 million crude helium enrichment plant that is currently operated by the BLM. The Cliffside Refiners Limited Partnership (CRLP) is a partnership made up of helium refiners that owned facilities on the BLM pipeline in 2000. The CRLP partners include Air Products, Praxair, Linde (formerly the British Oxygen Company), and Colorado Industrial Gas (formerly owned by El Paso Energy and recently acquired by Kinder Morgan). The cost to operate these facilities varies greatly depending on the plant size, volume loading, technical complexity, the level of integration with the energy company's natural gas plant, physical location, cost of labor, cost of power, etc. Transportation and distribution costs are highly variable depending on whether the helium is delivered as liquid or gas, the size of the container, ownership of the container, the mode of transportation, etc. Due to these numerous variables it is impossible to provide a general or average estimate that is meaningful.

Questions from Rep. Edward J. Markey

1. Mr. Nelson, Mr. Haines, Mr. Kaltrider: Please list the current refining capacity of each helium refinery connected to the BLM federal helium reserve pipeline owned by your company and what if any changes have been made to its refining capacity since 2000.

M1A: Air Products has constructed helium refinery plants adjacent to private natural gas companies in TX and KS (literally across the fence line on land leased from these companies). We've entered into long-term "take-if-tendered" contracts where we are obligated to purchase 100% of the helium they produce. The energy sector has forced all the delivery risk onto the refiners through these "take or pay" contracts. In order to manage this we have constructed, installed and dedicated sufficient refining capacity at these plants to support these contracts to ensure that we can receive and process 100% of the helium that is produced by them today and into the future. Since 2000 Air Products has not added any plants, however we continue

to upgrade our facilities to make them as efficient as possible. Our current installed refining capacity connected to the BLM pipeline system is nominally the same as it was in 2000.

2. Mr. Nelson, Mr. Haines, Mr. Kaltlider: Did any of the helium refineries connected to the BLM federal helium reserve pipeline owned by your company have spare refining capacity in any of the last years? If so, how much?

M2A: Spare refining capacity is a relative term. As described above, Air Products has installed refining capacity at our plants to meet our contractual obligations. If a source of private crude helium is down or producing at reduce rates, there might be short-term excess capacity from time to time, however much of that capacity is already contractually committed and dedicated to the private natural gas companies.

3. Mr. Nelson, Mr. Haines, Mr. Kaltrider: The National Academies of Science have recommended that the "BLM should adopt policies that open its crude helium sales to a broader array of buyers" and "negotiate with the companies owning helium refining facilities connected to the Helium Pipeline the conditions under which unused refining capacity at those facilities will be made available to all buyers of federally owned clued helium, thereby allowing them to process the crude helium they purchase into refined helium for commercial sale." Do you believe H.R. 527 would incentivize tolling agreements to refine crude helium between your company and entities not connected to the pipeline? Would your company supply requirements for mandatory tolling agreements?

M3A: As I have testified, Air Products has entered into tolling agreements, and with the right commercial conditions, we will do so in the future. "Mandatory tolling" is altogether different. We spent millions to build and maintain our helium refineries on the BLM system. Companies that want to sell helium but not refine it chose not to invest in their own refiners. Such companies, which are arguing for "mandatory tolling," invested their capital elsewhere, but appear to be urging Congress to establish price controls over our equipment and investment. Any legislation that would dictate "mandatory tolling" would represent a nationalization of a private asset, and would violate our constitutional and contractual rights. Considering that tolling arrangements can be and are entered into by parties operating on an arm's length basis, there is no reason for Congress to infringe our legal rights to accomplish this objective. Please include the attached legal analysis in the record. It describes at length the basis for our serious concerns about mandatory tolling.

4. Mr. Nelson, Mr. Haines, Mr. Kaltrider: For each helium refinery connected to the BLM federal helium reserve owned by your company, what percentage of crude helium refined at that refinery was sourced from the federal reserve and what percentage came from private sources. Please provide this information for each of the last three years.

M4A: Air Products reports monthly and annual helium production volumes to the BLM at the end of each fiscal year. BLM keeps all this information confidential. The information you are requesting is confidential and proprietary.

5. Mr. Nelson, Mr. Haines, Mr. Kaltrider: Mr. Nelson's testimony includes a graphic that projects the decline in production from the Reserve. That chart projects production from the Reserve fall by roughly 50 percent over the next 4 years and by approximately 85 percent in 10 years. Your company has spoken about wanting to have long-term contracts but isn't your company already voiding or adjusting long-term contracts because of inadequate supply? How are you going to meet your customers' needs if your own supply from the federal helium reserve is going to decline by 50–85 percent in the coming years?

M5A: Air Products is very aware of the BLM decline forecast and we are developing supply strategies to compensate for this decline. Successor legislation is needed this year to extend the BLM operations and preserve 30% of the global helium supply, bridging the time period necessary for new announced natural gas and helium production plants to come on-stream.

6. Mr. Joyner, Mr. Thoman, Mr. Lynch, Mr. Nelson, Mr. Haines, Mr. Kaltrider: H.R. 527 limits the amount of crude helium anyone entity can purchase in a single auction to 30 percent, do you believe that would ensure sufficient competition and auction participation while also protecting against market manipulation?

M6A: As stated in my testimony, "the provision in H.R. 527 that limits any one entity from purchasing more than 30% of the helium in an auction will, we believe, prove to be unworkably low. The purchasing limit should be raised to no more than 50%, along with the stipulation that the Secretary has the authority to adjust this limit accordingly to adapt to changing market conditions."

Mr. LAMBORN. OK, thank you.

Now, Mr. Haines.

STATEMENT OF NICK HAINES, HEAD OF HELIUM SOURCE DEVELOPMENT, LINDE NORTH AMERICA, INC.

Mr. HAINES. Mr. Chairman, Ranking Member Markey, and Committee members, I appreciate the opportunity to testify today. I am Nicholas Haines, head of Helium Source Development with Linde Global Helium. We are a division of Linde North America, Inc., headquartered in New Jersey, which has more than 15,000 employees in the U.S. Linde is a leading global industrial gases and engineering company.

We have an extensive investment in the helium business that is fully integrated, from production to distribution and retail sales. We own and operate a helium refinery in Otis, Kansas, where we produced the first commercially available liquid helium in 1964. We own and operate multiple other helium plants around the world, and have invested over $400 million in refining capacity, transfills, regionally based and cryogenic ISO containers for distributing helium around the world. Linde supplies helium to a wide variety of customers, including producers of semiconductors, MRIs, and other high-tech products.

Firstly, I would like to compliment you for recognizing the urgency of passing legislation this year to continue the BLM helium program. You have made this a priority, and we appreciate that. And we agree with you in some areas of your proposed bill.

Second, we agree on the need to create an ongoing funding mechanism that will allow the BLM to both continue operations and invest in technology upgrades for the Cliffside Reservoir.

Third, we agree on the need to improve the system for determining market prices and provide improved returns for taxpayer, whilst minimizing market disruptions. These are a good foundation to build upon.

Now, to address the areas of our disagreement. Our basic disagreement is over your proposal to auction 100 percent of the BLM's helium. We believe this will disrupt the market and create tremendous uncertainty with regard to continued helium supplies. As a business, we don't benefit from a higher or lower price of helium. However, we do lose if the market suffers from dramatic price swings or supply disruptions. So do our customers and so do our consumers, as the price uncertainty arising from these periodic auctions makes it more complex for customers to predict their costs and manage their businesses. We have heard also about price spikes and disruptions. You are designing a system that will make these spikes and disruptions worse.

Let me speak about certainty for a minute. This is a phrase you have heard not just from us, you have heard it from large end users. You have also heard it from small customers. To be able to maintain this investment, we need to have long-term contracts

with our suppliers and our customers. If we are unable to obtain these long-term supply agreements, we may be forced to reduce investments in costs, as well as contracts with our customers.

Our customers, in turn, need the reliability of long-term supply contracts. When the Nation's largest supplier of crude helium auctions 100 percent of its supply, we can't be sure on a periodic basis if we will have helium to supply our customers. Long-term contracts will become a thing of the past. Everyone, from large manufacturers of semiconductors to small welding shops and balloon shops will basically be operating in a spot market.

Think about someone who needs an MRI at a local clinic, and who may not be able to have that, due to the unavailability of helium supplies for servicing that MRI. This could result from the proposed auction process. Furthermore, Federal agencies using helium could also suffer.

Now let me speak about market disruption. For years, the Cliffside Reservoir has provided 50 percent of the U.S. supply of helium, and has been used as the industry's swing capacity, enabling plants there to be turned down during periods of excess supply. It would be invaluable to maintain this capability for as long as possible in order to avoid unnecessarily venting product from other existing sources. The reservoir is now in decline, and it will reach the proposed strategic reserve of 3 billion cubic feet in 5 to 8 years.

There are new large supplies of helium coming online around the world in Qatar, Algeria, and Wyoming. But their timing is uncertain, and there are currently shortages which is creating these price spikes and the volatility in the market. To transition the Cliffside Reservoir to a pure auction system will make that price and supply volatility dramatically worse. It will not result in any new sources of helium being developed.

The Cliffside Reservoir has, frankly, been a source of stability in a very difficult environment, and has benefitted consumers for decades. It has benefitted high-tech industry here, in the U.S. and it has fostered innovation, which are things we should be trying to preserve.

Let me close by saying that we understand the desire to get a fair deal for taxpayers. That is commendable. We agree that a better job can be done determining a fair market price. We also believe, justifiably, that a sea-change to a pure auction will jeopardize the stability and reliability that this global helium supply chain depends upon. We think that it is possible to create a process to determine a fair-market price and still preserve some certainty for our customers with minimal market disruption. Unfortunately, the approach you have proposed will not achieve that. We are ready to roll up our sleeves and work with you to get this done.

Thank you for allowing me to testify, and I would be happy to answer any questions.

[The prepared statement of Mr. Haines follows:]

Statement of Nicholas Haines, Head of Helium Source Development, Linde Global Helium

Mr. Chairman and Ranking Member Markey—I appreciate the opportunity to testify today. I am Nicholas Haines, Head of Helium Source Development, with Linde Global Helium.

Linde Global Helium is a division of Linde North America, Inc. We're headquartered in New Jersey and we have more than 15,000 employees in the United States. Linde is a leading industrial gas and engineering company. We operate in more than 100 countries, with more than 61,000 employees globally.

We have an extensive investment in the helium business that is fully integrated from production to distribution and retail sales. Linde owns and operates a helium refinery in Otis, Kansas, where we produced the first commercially available liquid helium in 1964. We also own and operate a number of other helium plants around the world and have invested hundreds of millions of dollars in refining capacity, regional transfill stations, and cryogenic ISO containers for distributing helium around the world to its points of use. Linde supplies helium to a wide variety of customers, including producers of semiconductors, MRI machines and other high-tech products.

Firstly, I would like to compliment all of you for recognizing the urgency of passing legislation this year to continue the BLM helium program. You've made this a priority, and we appreciate that and we agree with you on some areas of your proposed Bill. Second, we agree on the need to create an ongoing funding mechanism that will allow the BLM to both continue operations and invest in technology upgrades for the Cliffside Reservoir. Without this funding, the reservoir will not continue to operate. Third, we agree that we need to improve the system for determining market prices and provide improved returns for taxpayers, whilst minimizing market disruption. These are a good foundation for us to build on.

Now to address the areas of our disagreements. Our basic disagreement is over your proposal to auction 100% of the BLM's helium. We believe this will disrupt the marketplace and create tremendous uncertainty with regard to continued helium supplies. I would like to note at the outset that, as a business, we don't benefit from a higher or lower price of helium. We do lose, however, if the market suffers from dramatic price swings or supply disruptions. So do our customers, and so do consumers. The price uncertainty arising from periodic auctions makes it more complex for customers to predict their costs and manage their businesses.

Let me speak about certainty for a minute. This is a phrase you've heard not just from us. You've heard it from large end-users. You've heard it from small customers. Refining and delivering helium is a high-fixed-cost business. Helium has to be stored and distributed cost effectively in bulk form at -452 degrees Fahrenheit, and that's a real challenge.

To be able to maintain this investment, we need to have long-term contracts with our suppliers and customers. If we are unable to obtain long term supply agreements, we may be forced to reduce investments and costs, as well as contracts with our customers. Our customers in turn need the reliability of long-term contracts as well. I think you've heard this from them directly. When the nation's largest supplier of crude helium auctions 100% of its supply, we can't be sure on a periodic basis if we'll have helium to supply to our customers. Long-term contracts will become a thing of the past. Everyone from large manufacturers of semi-conductors to small welding shops will basically be operating in a spot market. As I'm sure you've heard, the spot market is not a place you want to be right now. Think about someone who needs an MRI at a local clinic, and who may not be able to have that due to the unavailability of helium supplies for servicing that MRI, which could result from the proposed auction process.

Let me speak about market disruption for a moment. For years, the Cliffside Reservoir has been providing 50% of the U.S. supply of helium and has been used as the only "swing capacity" in the industry, enabling plants there to be turned down during periods of excess supply. It would be invaluable for the industry to maintain this capability for as long as possible, in order to avoid unnecessarily venting product from other sources. The Reservoir is now in decline and it will reach the proposed strategic reserve of 3 bcf in 5 to 8 years. There are large new supplies of helium coming on line around the world. In Qatar. In Algeria. In Wyoming. But their timing is uncertain. This transition is creating shortages. It's creating tremendous price spikes on the spot market. It's creating a lot of volatility. To transition the Cliffside Reservoir to a pure auction system will make that price and supply volatility dramatically worse. In this environment, it will encourage speculation and hoarding and will not result in new sources of helium being developed.

The Cliffside Reservoir has frankly been a source of stability in a very difficult environment. The reliability and stability of this operation has benefited consumers for decades. It's benefited the high-tech industry here in the U.S. and it's fostered innovation. Those are things we should be striving to preserve.

One of the objectives of the National Academies of Sciences report of 2010 was to encourage recovery and recycling, however with supply uncertainty, customers

may be less likely to consider this technology, which typically requires long term investments.

Let me close by saying this. We understand the desire to get a fair deal for the taxpayers. That's commendable. We agree that a better job can be done determining a fair market price. We also believe, justifiably, that a sea-change to a pure auction will jeopardize the stability and reliability that this global helium supply chain depends upon. We think that it's possible to create a process to determine a fair market price and still preserve some certainty for our customers, with minimal market disruption. Unfortunately the approach you have proposed will not achieve that. We're ready to roll up our sleeves and work with you to get this done.

Thank you again for allowing me to testify today. I'd be happy to answer your questions.

Response to questions submitted for the record by Nicholas Haines, Head of Helium Source Development, Linde Global Helium

Questions from Chairman Doc Hastings

1. Mr. Haines, the Government Accountability Office produced a chart showing the price of BLM crude helium selling at just under $80 per thousand cubic feet, while the price of Grade A refined helium sells for approximately double that—$160 per thousand cubic feet. Please provide the committee with an estimate of the average price per thousand cubic feet of the last 5 helium contracts you have negotiated or renegotiated to sell crude refined helium.

Answer:

Linde does not sell crude helium. We sell only refined helium products. As a general rule, we do not publicly release details of contracts with our customers due to their proprietary nature and anti-trust concerns.

***2.* Mr. Haines, is the GAO estimated price an accurate reflection of the price of Grade A refined helium?**

Answer:

Prices for Grade A refined helium can vary widely. Important factors that affect the price include quantity sold, length of contract, delivery distance, type of container (cylinders, liquid, tube trailers), supply and demand in the region, etc.

Without having more details behind the prices cited by the GAO, it is difficult to comment on their accuracy. Generally speaking, we believe that the prices cited by the GAO for refined helium are significantly higher than industry-average prices for refined helium sold under long-term contracts in the U.S. during those time periods.

3. Mr. Haines, please provide the Committee with a list of the refined helium products (grade) you produce from the federal helium reserve? In each category, please provide some estimate of the current market price for each product.

Answer:

In the U.S., Linde produces:

- *Grade 5.0 Conformance Grade Helium*
- *Grade 5.0 Analytical Grade Helium*
- *Liquid Helium*

As a general rule, we do not publicly release pricing details due to their proprietary nature and anti-trust concerns.

4. Mr. Haines, the Committee is interested in understanding the capital costs related to the refining and distribution process. Could you please provide the Committee an estimate of your refining costs at the BLM connected facilities on a per thousand cubic foot basis? Could you please provide the Committee an estimate of the cost of distribution related to the products produced at the BLM facility on a per thousand cubic foot basis (if it can be broken down for different products or grades of product please provide that information)?

Answer:

The costs of refining, distributing and filling liquefied helium are substantial, due in part to the fact that the helium must be maintained at a temperature of -452 degrees Fahrenheit.

Costs for each of these factors can vary, depending on the circumstances. Also we do not generally release actual cost figures. However, we could offer these rough estimates of the ranges of costs experienced by the industry:

Estimated Refining Costs: $20/mcf–$30/mcf.
Estimated Distribution Costs: $20–$40/mcf.
Estimated Filling Costs (at transfills): $15-$20/mcf.

Questions from Rep. Edward J. Markey

1. Mr. Nelson, Mr. Haines, Mr. Kaltrider: Please list the current refining capacity of each helium refinery connected to the BLM federal helium reserve pipeline owned by your company and what if any changes have been made to its refining capacity since *2000.*

Answer:

Linde's Helium refinery plant is located at Otis, Kansas.

Refining Capacity in 2000 was approximately 1,100 mmcf annually—26% of total system capacity, as posted on the BLM web site.

Current Refining Capacity is the same—1,100 mmcf annually.

2. Mr. Nelson, Mr. Haines, Mr. Kaltrider: Did any of the helium refineries connected to the BLM federal helium reserve pipeline owned by your company have spare refining capacity in any of the last three years? If so, how much?

Answer:

Over the last three years Linde has had spare refining capacity at Linde's Otis, Kansas, plant.

Excess capacity is the direct result of insufficient feed-gas availability. In other words, because of the diminishing volume of helium in the reserve and insufficient compression, the system has not been able to deliver a volume of helium sufficient to maximize refinery capacity on the pipeline.

3. Mr. Nelson, Mr. Haines, Mr. Kaltrider: The National Academies of Science have recommended that the "BLM should adopt policies that open its crude helium sales to a broader array of buyers" and "negotiate with the companies owning helium refining facilities connected to the Helium Pipeline the conditions under which unused refining capacity at those facilities will be made available to all buyers of federally owned crude helium, thereby allowing them to process the crude helium they purchase into refined helium for commercial sale." Do you believe H.R. *527* would incentivize tolling agreements to refine crude helium between your company and entities not connected to the pipeline? Would your company support requirements for mandatory tolling agreements?

Answer:

Linde is strongly opposed to mandated tolling. We believe such a policy would constitute an unconstitutional government taking of private property. In addition, we believe that a mandated tolling policy would unjustifiably reward companies that chose not to invest in helium refinery capacity at the expense of those that did make such an investment. A mandated tolling scheme would certainly create strong disincentives for ongoing investments that are necessary to maintain the infrastructure to refine and deliver helium.

We believe that the most significant step the government could take to incentivize tolling agreements is to increase the delivery capacity of the reservoir and related infrastructure.

4. Mr. Nelson, Mr. Haines, Mr. Kaltrider: For each helium refinery connected to the BLM federal helium reserve owned by your company, what percentage of crude helium refined at that refinery was sourced from the federal reserve and what percentage came from private sources. Please provide this information for each of the last three years.

Answer:

This information is competitively sensitive and proprietary in nature, and Linde does not generally release it.

***5.* Mr. Nelson, Mr. Haines, Mr. Kaltrider: Mr. Nelson's testimony includes a graphic that projects the decline in production from the Reserve. That chart projects production from the Reserve to fall by roughly *50* percent over the next 4 years and by approximately *85* percent in *10* years. Your company has spoken about wanting to have long-term contracts but isn't**

your company already voiding or adjusting long-term contracts because of inadequate supply? How are you going to meet your customers' needs if your own supply from the federal helium reserve is going to decline by *50–85* percent in the coming years?

Answer:

We have not voided long-term contracts with our customers due to recent shortages in helium supply. When shortages have occurred, we have allocated product to our customers on a fair and proportional basis. We continue to believe that long-term contracts have a great deal of benefit for industries that depend on helium, and consumers. These contracts provide a degree of certainty and stability that maximize efficiency and enable innovation in high-tech products and services.

(I would like to note that Linde has not allocated—or provided a reduced amount—of helium to our federal in-kind customers. Even when we have been compelled to allocate helium to our commercial customers, we have continued to provide the full amounts under contract to federal customers.)

There is no question that the BLM reservoir is depleting and that there is an urgent need to replace this volume of product over the next 10 years. The industrial gas industry, including Linde, is investing significant resources in developing new sources of helium around the world, including in Algeria, Qatar, Australia, and other locations. It is our hope and expectation that these new sources will enable us to reliably continue to supply our customers under existing long-term contracts. However there is uncertainty about when these new sources will begin producing, and what quantity of helium they will ultimately produce. For this reason, we continue to rely on the BLM as a stable source of helium in the near term.

For these reasons, we have argued that one of the goals of your legislation, in addition to realizing a fair market price for the government's helium, should be to preserve some of the stability and certainty provided by the BLM helium supply. We believe that both of these objectives could be met with a hybrid system that combines a partial auction of the BLM's helium with a continuation of the current allocation formula for the remainder of the helium, using the auction price as a significant component of the pricing formula. Such a hybrid system would help to prevent market disruptions, while ensuring fair market prices.

One final point: The BLM system has historically been able to provide industry turn-down capacity. This capacity has been vital in the past in preventing the venting of unclaimed helium. We believe this capacity should be maintained in order to avoid potentially venting this critical resource in the future. We fully realize that while this turn-down capability will diminish, having it available is vital.

***6.* Mr. Joyner, Mr. Thoman, Mr. Lynch, Mr. Nelson, Mr. Haines, Mr. Kaltrider: H.R. 527 limits the amount of crude helium any one entity can purchase in a single auction to 30 percent, do you believe that would ensure sufficient competition and auction participation while also protecting against market manipulation?**

Answer:

We do believe that the current helium marketplace is vulnerable to manipulation, and that measures are necessary to prevent hoarding and price speculation. We support measures to prevent speculation. Possible measures that would help achieve this goal include limiting lot sizes, or limiting the total quantity any one party could purchase at auction. Determining the appropriate limitation for any one party is challenging. We tend to believe that 30% may be too low.

Mr. LAMBORN. OK, thank you for your testimony.

And now we will hear from Mr. Kaltrider.

STATEMENT OF SCOTT KALTRIDER, VICE PRESIDENT, BUSINESS MANAGEMENT AND HELIUM, PRAXAIR, INC.

Mr. KALTRIDER. Good morning, Mr. Chairman, other distinguished members of the Committee. My name is Scott Kaltrider, I am the Vice President of Business Management and Helium for Praxair. For those of you that aren't aware, Praxair is the largest industrial gas company in North and South America. We are headquartered in Danbury, Connecticut. We have over 10,000 employees in the U.S., over 500 facilities. We operate, employ, or have

customers in all of the States represented on the Committee. I certainly appreciate the opportunity to be here today and express Praxair's views on the proposed bill.

We think the proposed bill is a good starting point, and we are hopeful that, with some of the recommendations that I am about to make in my testimony, we can get the bill to a piece of legislation that would be supported by all stakeholders.

Upon reviewing the bill, it is apparent that there are two overriding priorities that the bill would like to address, the first being the creation of some market-based pricing mechanism for adjustment of the BLM price to ensure competitively priced product, crude product out of the BLM, the second being ensuring continuity of supply from the BLM to end users during the implementation of the bill.

It has been spoken about through other testimony, but I think it is worth repeating. Today, the notion of a BLM or a market-based pricing mechanism, to describe that as circuitous would probably be the most accurate definition. It is kind of like a dog chasing its tail. Every year the BLM will issue a new price for its posted price in October, and the refined sources around the world since 2008 have basically incorporated that pricing mechanism into their annual escalation.

So, the notion that the BLM will ever catch up with or leapfrog, from a market standpoint, the global refined helium sources is—that is not going to happen under the current scenario, and for good reason. It is a crude product versus a refined product. There is, as Mr. Spisak testified, a tremendous difference in those two.

Having said that, a 100 percent auction is a very high-stakes play, we feel, at this point in time. It is coincidental that this legislation is coming up and the funding of this program is coming up at a time where we are probably seeing the most exacerbated shortage, globally, that we have seen in the last two decades.

And so, I think, we, at Praxair, would caution the Committee in taking very great care to make sure that we are not setting up a process during a time of duress, where the supply demand equation is heavily favoring demand. Because, in fact, this will correct itself. There will be more supply coming online in the next 6 to 18 months. And it is not inconceivable that, as this bill gets implemented, you could be in a situation where supply is the overriding factor in the supply demand equation. And when the BLM goes to auction product, no matter how much it is, there may not be as much interest as you might think today. So we would caution that.

Regarding continuity of supply, 100 percent auction will increase and introduce a high degree of instability into the market. An auction every 6 months will likely cause our end users to go and either change suppliers or change slates of suppliers. Today, many, the vast majority of the end users single source their product, and they do it in a very rigorous manner in selecting their supplier. So it will create, in essence, a perpetual spot market that will make it very difficult for companies to strategically plan, make investment, and specifically, make investment for growth and jobs.

Further, the bill's provision, by limiting a maximum of 30 percent to any one party that can gain a bid, we feel creates an indirect tolling mandate on the refiners and, frankly, subsidizes access

to the reserve, via the capital investment that we and the other refiners have made in the past.

However, regarding this same provision, probably more concerning to the Committee is that the 30 percent cap significantly reduces the amount of helium that Praxair would get today, and thereby jeopardizes our ability to meet our in-kind requirements under the in-kind Federal program. And so, those agencies such as NASA and NIH and Lawrence Livermore and those entities, would be at risk of not being reliably supplied.

Finally, there is a provision in the bill that would allow for up to 24 months of crude being processed. And we feel that would result in stranded helium molecules in the reserve that couldn't be recovered, and further exacerbate the global supply situation.

In conclusion, consistent with my written testimony, Praxair recommends a much more measured approach. It is a three-element proposal. You can see it in my written testimony. It does call for a logical, orderly draw-down in a three-phase fashion of the BLM reserve. It does provide for an auction of a piece of the reserve, an annual auction of a commercially significant quantity. And it does provide for access to the bidders that are non-refiners to refining capacity, to ensure they could bring product to market.

At the end of the day, our customers have expressed to us that jobs are on the line here, and it is very important that we get this done in a responsible manner. Praxair really appreciates the opportunity to be here, and is willing and able to work with the Committee to come up with a mutually acceptable piece of legislation.

[The prepared statement of Mr. Kaltrider follows:]

Statement of Scott Kaltrider, Vice President, Business Management & Helium, Praxair, Inc.

Good morning Chairman Hastings, Ranking Member Markey and Members of the Committee. My name is Scott Kaltrider and I am the Vice President of Business Management & Helium for Praxair, Inc., the largest industrial gas company in North and South America and one of the largest worldwide. Praxair is headquartered in Danbury, Connecticut and employs approximately 10,000 people in more than 500 facilities across the United States. The company manufactures, sells, and distributes atmospheric, process, and specialty gases. Praxair products, services, and technologies bring productivity and environmental benefits to a wide range of industries including aerospace, chemicals, food and beverage, electronics, healthcare, manufacturing, and metals among others. We have operations, employees, or customers in every state represented on this Committee.

Praxair has been in the helium business for nearly 100 years serving both private and federal government users. We supplied the helium used by NASA to launch space shuttles into orbit, the helium-oxygen breathing mixtures used by Navy sailors while performing deep-dive operations, and the helium used by the Air Force each time a Delta 4-Heavy is launched to provide our intelligence community with the information necessary to protect our citizens.

Our long-term planning coupled with investments in a robust supply chain and a diverse set of crude and refined helium sources have made us a world leader in refined helium production and distribution. We have about $500 million invested in plants and equipment required to access, process, refine, and deliver to market helium sourced from the Federal Reserve operated by the BLM.

I would like to thank this Committee for the opportunity to appear at today's hearing on the Responsible Helium Administration and Stewardship Act (RHASA). I would also like to thank the Chairman for directing his attention to the important work of reauthorizing the Federal Helium Program. Many vitally important industrial, medical, and scientific processes depend on reliable helium supplies. Since the Federal Helium Reserve currently accounts for 50-percent of the U.S. helium supply and will likely be depleted by 2018–20, it is critically important that the program be concluded in a careful and thoughtful manner. While program improvements are

surely necessary, any improvements should be practically grounded and serve the best interests of manufacturers who rely on a predictable supply of helium.

As a threshold observation, I am sure that there is unanimous agreement that any legislative proposal must (1) obtain fair market value of federally sourced crude helium and (2) do so through a transparent mechanism that will avoid disrupting the helium supply chain. While I believe that RHASA was drafted with this intention squarely in mind, its effect would be to place counterproductive limits on the role of helium refiners. Its practical effect would be to disrupt the helium industry's ability to meet the helium demands of our hundreds of customers throughout the country. It is my hope that through my testimony today, and the many subsequent conversations with you and your staff that will undoubtedly take place, we will be able to fashion a policy that avoids these pitfalls.

The Federal Helium Program was created in 1925 to guarantee the availability of helium for national defense purposes. As a result, the United States constructed a helium extraction and purification plant outside of Amarillo, Texas that began operations in 1929. In the 1960's, as the demand for helium increased, Congress responded by encouraging private natural gas producers to separate crude helium from natural gas and sell it to the government. The Federal government ended this program in 1973 and opened the reserve to private capital and development. This action spurred the creation of a private helium sector in which certain industrial gas companies made the decision to invest in liquid helium refining facilities. Praxair did make such investments and other companies opted not to do so. By the mid-1990s, private demand for helium became significantly greater than government demand because of advances in research, technology and medical diagnostic equipment.

In 1996, under the Republican-led House and Senate, Congress passed the Helium Privatization Act, which directed the federal government to exit the helium market. The Privatization Act directed the BLM to shutdown federal helium refining operations and dismantle the facility by 1999. It also called for the sale of crude helium reserves to begin in the year 2005 and to be concluded by December 31, 2014. The Privatization Act provided minimum selling prices, adjusted for inflation, for crude helium so that adequate revenue would be generated to repay the government's investment in the Reserve and the construction costs of the related infrastructure. The Secretary of the Interior was provided the discretion to increase price over the minimum price set by the Privatization Act. The price charged for BLM helium has been a point in controversy. Without assessing the validity of claims that price was set too low, let me just say that neither Praxair nor any refiner has had any role in making BLM pricing determinations.

Pursuant to regulations adopted to implement the Privatization Act, the BLM sells crude helium from the Federal Reserve in two annual phases or "sales." In the first sale (called the Allocated Sale), 94% of the crude helium is offered for sale in set percentages to each company that has refining capacity on the reserve system. This includes Praxair. The percentage allocated to each refiner is based on that refiner's refining capacity. Refining capacity is, of course, a function of the respective capital investments in plants and equipment made by each refiner. It is important to note that the helium sold during the Allocated Sale is explicitly meant for current consumption. By prioritizing and contractually guaranteeing set volume to the refiners, such as Praxair, it ensures that refined product will be delivered to the end market in real time and, therefore, minimize market disruptions. Critically, this provides the market with the certainty necessary to execute long-term contracts with end users and to provide them with the confidence of knowing that their helium needs will be met. Thousands of jobs depend on our customers' abilities to secure a constant and stable supply of helium. The Act and its regulations recognize the essential role that the refiners play in the effective operation of the BLM helium system.

While the Privatization Act envisioned the entire reserve being sold by 2015, this has not yet occurred. Rather, reserves continue to exist such that the BLM can continue to sell helium for medical and commercial purposes for approximately 5–7 more years based on current consumption. That is, of course, why we are discussing the program today. To be clear, there is no new helium to be sourced from the BLM's reserve. The supply is finite. It is in the nation's interest to promote the orderly wind-up of the government's role in the helium business.

RHASA fails to recognize the refiners' critical role. As described in more detail below, the proposal will result in a 15.5%–100% reduction in the amount of helium that Praxair could purchase. Similar reductions would be imposed on all other refiners. This would effectively undermine the value of our investments totaling $500 million made to efficiently process, refine, and distribute the helium to our customers. It is important to note, that the BLM's value to the public is maximized

by having efficient refining and distribution capability. In 1996, Congress explicitly designed the program to ensure that helium is apportioned and efficiently brought to market to the benefit as many end users as possible. Refiners perform this function by drawing from a variety of public and private helium sources—thus not relying exclusively on the BLM. RHASA undermines this imperative by establishing a program under which a distributor can be awarded 100% or more of the helium required for their customers which will result in total reliance on the BLM system and the stranding of helium in inefficient places. American manufacturers cannot operate on the resulting supply volatility risked by RHASA.

The proposal specifically seeks to reform the Helium Program through a 100% semi-annual auction that contains additional layers of governmental administration, such as significant private reporting and recordkeeping mandates, none of which had previously existed. For example, H.R. 527 grants the Secretary of the Interior unlimited authority to develop a helium market surveillance program and does not guarantee adequate that sensitive commercial information will be protected. Under the label of "equal pipeline access," RHASA threatens to disrupt pre-existing contracts relating to pipeline allocation that Praxair has negotiated with the BLM and do not expire for many years. While I question the prudence of materially reinventing the program in the twilight of its existence, I am deeply concerned with the construction of the experimental auction system that will ultimately lead to significant disruptions in the global helium market adversely impacting federal agencies like NASA and the Air Force, medical research and service providers, and manufacturers.

A 100% auction is impractical. Only a few companies made the necessary and prudent business decisions to invest in helium transport logistics. Indeed, only 5 companies have the ability to take delivery of 10% or more of the BLM's helium supply from a liquid helium pipeline plant in Texas, Oklahoma, or Kansas to an end user in Idaho or North Carolina or a launch pad in California. Failing to take into account supply chain capabilities when designing any auction, let alone a 100% auction, will result in stranded helium and deprive U.S. manufacturing and service providers of an important feed stock.

RHASA is described as a "free-market plan to prevent a global helium shortage" but in reality it is something very different. It will not bring any new or additional helium molecules to the market that will mitigate the current supply and demand imbalance that exists. Rather, in an effort to increase the number of bidders at each semi-annual auction to maximize price, RHASA redistributes the same volume of helium to a wider group of purchasers—purchasers who have not invested in the infrastructure to process, refine, and distribute helium to those end users who need helium to support their operations. Although an auction may appear on its surface to be rooted in free market principles, the design and scale of this particular auction would compromise stability in the global helium supply chain while also breaching public/private contracts, and, most importantly, make U.S. manufacturers less competitive on a global basis.

There have been allegations that America's private helium industry has not diligently identified and developed new and private sources of helium. This is not correct. Since the Helium Privatization Act was passed, there have been robust private helium extraction projects developed to meet demand. Further, the equivalent of about 30% of the current global helium capacity will come online this year from new projects in the U.S. and abroad. Praxair has and will continue to invest tens of millions of dollars in the United States to to develop additional helium supply. As with all projects of this scale and complexity, these ambitious plans face headwinds which this bill should address, like permitting difficulties and delays. The key to increasing helium supplies is in the development of additional natural gas reserves, specifically those containing helium, since as we all recognize a majority of natural gas reserves don't contain helium. Without an incentive to co-develop the natural gas, the feasibility of helium sourcing is compromised.

Praxair is committed to working with the Committee to accomplish our shared goal—reauthorization of the Federal Helium Program in a manner that brings fair market value to the U.S. taxpayer and does not disrupt the global helium supply chain. We believe this can be done. We have been working with a broad array of stakeholders to modify the proposed auction in a way that would be acceptable to all interested parties.

A 100% auction is not necessary to arrive at a fair and transparent price. What is feasible and effective, however, is that a commercially significant amount of helium be sold through an auction in blocks that are truly useful and deliverable.

It is imperative for the auction to be meaningful and well designed. A meaningful and well designed auction will attract potential buyers that are knowledgeable, qualified, and possess the capital capacity to manage the resulting award. Further,

a valid auction must have a market-based mechanism to obtain a fairly priced tolling agreement from a pipeline refiner. Congress can drive competition among pipeline refiners for a tolling agreement by working with the refiners to set aside a portion of the current pipeline allocation for access by parties bidding on the blocks of helium ultimately set aside. Congress should not promote access to pipeline refining through a mandate, whether direct or indirect.

The contours of our proposal are:

- A 3-phase draw down of the Federal Helium Reserve to prevent disruption in the global helium market.
- Sale price supported by the combination of an annual auction of commercially significant blocks of helium, data collection and analysis of private helium transactions.
- A pro rata "special pipeline allocation" equal to the percentage awarded through an auction that ensures that winning bidders who do not have refining capacity will be able to take possession.

An auction must have guard rails to ensure that federal agencies and grantees, manufacturers and medical service providers are not injured. An auction design must therefore ensure a predictable and prudent drawdown while other new domestic and/or international sources of helium can be brought to market. It must also ensure supply chain stability so that end users can enjoy the certainty of long-term contracting with their suppliers.

We thank the Committee for considering our views. RHASA is a good starting point for discussion and we are confident that with the types of modifications outlined earlier we will have a product that can be supported by all stakeholders.

Response to questions submitted by Scott Kaltrider, Vice President, Business Management & Helium, Praxair, Inc.

March 18, 2013

Dear Chairman Hastings:

Thank you for providing Praxair, Inc. with the opportunity to testify at the February 14, 2012 hearing on "The Past, Present, and Future of the Federal Helium Program" and we appreciate the additional questions you have presented.

As an initial observation, many of the questions presented assume a set of facts and circumstances that are not supported by the reality of Praxair's experience in the refining and sale of helium. In addition, many of the questions request information that is of a confidential and commercially sensitive nature, which we, as you can understand, cannot answer.

Consistent with Praxair's interest in providing helpful factual information to the Committee, we have answered your inquiries as best we can.

Answers to Questions from Chairman Doc Hastings

1. Mr. Kaltrider, the Government Accountability Office produced a chart showing the price of BLM crude helium selling at just under $80 per thousand cubic feet, while the price of Grade A refined helium sells for approximately double that—$160 per thousand cubic feet. Please provide the committee with an estimate of the average price per thousand cubic feet of the last 5 helium contracts you have negotiated or renegotiated to sell crude refined helium.

A: This question is ambiguous. The meaning of "crude refined helium" is unclear as it is used in this question and is not a commercially recognized term. In answering your question we have assumed that what was intended was to ask about helium we refined and sold. If we have correctly gleaned the intent of the question, we can advise the Committee that Praxair's prices per thousand cubic feet vary greatly since price in any given transaction is determined as a result of a number of unique factors including without limitation, the terms and conditions of sale, delivery mode, volume, grade, distance from plant, as well as time of purchase.

2. Mr. Kaltrider, is the GAO estimated price an accurate reflection of the price of Grade A refined helium?

A: Our response to this question, due again to the ambiguity of the question, is a limited one. Specifically, regarding the price paid by customers for helium refined and sold by Praxair we would reiterate our response to question 1 above.

3. Mr. Kaltrider, please provide the Committee with a list of the refined helium products (grade) you produce from the federal helium reserve? In each category, please provide some estimate of the current market price for each product.

A: The following is a list of the helium products (grades) Praxair produces from the federal helium reserve.

The majority of helium produced at refineries is liquid helium conforming to CGA Grade P with limited sales of High Purity Gas (4.7 or BOM Grade A). Currently, Praxair has the only refinery producing USP Gaseous Helium. Most other grades are packaged and verified at redistribution centers.

As we explained above, we are unable to provide "current market price" for each product with any reasonable degree of certainty since price in any one given transaction is determined by a variety of factors.

4. Mr. Kaltrider, the Committee is interested in understanding the capital costs related to the refining and distribution process. Could you please provide the Committee an estimate of your refining costs at the BLM connected facilities on a per thousand cubic foot basis? Could you please provide the Committee an estimate of the cost of distribution related to the products produced at the BLM facility on a per thousand cubic foot basis (if it can be broken down for different products or grades of product please provide that information)?

A: Praxair, Inc.'s capital costs related to the refining and distribution process are confidential and commercially sensitive and for that reason we are unable to provide further information in response to this question.

Answers to Questions from Rep. Edward J. Markey

1. Mr. Nelson, Mr. Haines, Mr. Kaltrider: Please list the current refining capacity of each helium refinery connected to the BLM federal helium reserve pipeline owned by your company and what if any changes have been made to its refining capacity since 2000.

A: The current refining capacity of each helium refinery connected to the BLM federal helium reserve pipeline is publicly available online at the following website: http://www.blm.gov/pgdata/etc/medialib/blm/nm/programs/0/helium_docs.Par.80517.File.dat/FY2011%20open%20mkt%20wrksht%20qtr%202.pdf

2. Mr. Nelson, Mr. Haines, Mr. Kaltrider: Did any of the helium refineries connected to the BLM federal helium reserve pipeline owned by your company have spare refining capacity in any of the last three years? If so, how much?

A: Yes, this information is publicly available online at the following website:
http://www.blm.gov/pgdata/etc/medialib/blm/nm/programs/0/helium_docs/statistical_reports2.Par.74609.File.dat/Stat%20Sep2010%20post.pdf
http://www.blm.gov/pgdata/etc/medialib/blm/nm/programs/0/helium_docs/statistical_reports2.Par.69270.File.dat/Stat%20Sep2011%20post.pdf
http://www.blm.gov/pgdata/etc/medialib/blm/nm/programs/0/helium_docs/statistical_reports2.Par.36814.File.dat/Stat%20Sep2012%20post.pdf

3. Mr. Nelson, Mr. Haines, Mr. Kaltrider: The National Academies of Science have recommended that the "BLM should adopt policies that open its crude helium sales to a broader array of buyers" and "negotiate with the companies owning helium refining facilities connected to the Helium Pipeline the conditions under which unused refining capacity at those facilities will be made available to all buyers of federally owned crude helium, thereby allowing them to process the crude helium they purchase into refined helium for commercial sale." Do you believe H.R. 527 would incentivize tolling agreements to refine crude helium between your company and entities not connected to the pipeline? Would your company support requirements for mandatory tolling agreements?

A: No, we do not believe H.R. 527 would incentivize tolling agreements to refine crude helium. In addition, Praxair does not support requirements for mandatory tolling agreements since such requirements raise legal and Constitutional issues under the Takings Clause of the Fifth Amendment.

4. Mr. Nelson, Mr. Haines, Mr. Kaltrider: For each helium refinery connected to the BLM federal helium reserve owned by your company, what percentage of crude helium refined at that refinery was sourced from the federal reserve and what percentage came from private sources. Please provide this information for each of the last three years.

A: This information is publicly available online at the following website: See above as well as http://minerals.er.usgs.gov/minerals/pubs/commodity/helium/mcs-2013-heliu.pdf

5. Mr. Nelson, Mr. Haines, Mr. Kaltrider: Mr. Nelson's testimony includes a graphic that projects the decline in production from the Reserve. That chart projects production from the Reserve to fall by roughly 50 percent over the next 4 years and by approximately 85 percent in 10 years. Your company has spoken about wanting to have long-term contracts but isn't your company already voiding or adjusting long-term contracts because of inadequate supply? How are you going to meet your customers' needs if your own supply from the federal helium reserve is going to decline by 50–85 percent in the coming years?

A: In anticipation of the gradual draw down of the federal helium reserve to 600 million cubic feet pursuant to the Helium Privatization Act of 1996, we have invested in a robust supply chain which utilizes multiple helium sources.

6. Mr. Joyner, Mr. Thoman, Mr. Lynch, Mr. Nelson, Mr. Haines, Mr. Kaltrider: H.R. 527 limits the amount of crude helium any one entity can purchase in a single auction to 30 percent, do you believe that would ensure sufficient competition and auction participation while also protecting against market manipulation?

A: No.

Mr. LAMBORN. OK, thank you. And I want to thank each of the panelists for being here. This is an extremely important issue, and it is also a very complex issue. Helium is a unique product. And the structure that has been built up containing public elements and private elements is a unique mixture that I haven't seen in any other industry in our country, how the public and private has blended together. So it is very complicated. And your testimony has been very helpful for that.

I will just start out. We will have multiple rounds of questions. There is only several of us who are here right now. Hopefully we can get through that and take advantage of the expertise that we have sitting on this panel before us right now.

OK, I asked a question at the very beginning of the government witnesses concerning ownership. You probably heard their answers. Basically, I hope I state this correctly, but the government owns the helium that is under the ground. And at such time that it is sold, and I am a little hazy on when that is, if it is at delivery where that enters into the equation, but upon a complete sale, then it becomes the property of the person purchasing. Is there any disagreement with a working definition like that that any one of you might have?

Mr. NELSON. Mr. Chairman, if you don't mind, I will take that question. I left with Sophia earlier some diagrams that might help with the answer to that question. I don't know if they have been distributed or not.

Mr. LAMBORN. We can throw it up on the screen. Is it this one, right here?

Mr. NELSON. Yes, Mr. Chairman.

Mr. LAMBORN. OK.

Mr. NELSON. It is a wire diagram explaining the BLM system and how it interfaces with private industry.

Mr. LAMBORN. OK, I have it in front of me. We will distribute it to the members of the Committee who are currently present. But please go ahead while we are——

Mr. NELSON. And we might refer to this diagram throughout the question and answers——

Mr. LAMBORN. Yes, please proceed.

Mr. NELSON. But to answer your question very specifically, in the lower left-hand corner of the diagram there is a cloud which depicts the raw gas that is thousands of feet below the surface, which is the BLM helium reservoir that we all talk about. When a sale of BLM helium takes place, the sale is actually selling the helium in the ground, in-situ, where it is a combination of natural gas and helium combinations, and it is effectively a ledger entry, as Mr. Spisak had indicated, whereby the government is managing on a ledger book the amount of helium that is in that reservoir. And as they sell it off on some periodic basis, they transfer some of it from the government's storage account into a private storage account, almost like managing a passbook savings account at the bank. But that is where the sale takes place. It is not refined helium or crude helium. It is actually in-situ, in the ground.

Mr. LAMBORN. OK, thank you. Anyone else that would have a different take on that?

Mr. HAINES. Mr. Chairman, I would like to just continue the point Mr. Nelson was making, and that is that in order to actually get delivery of that helium at our various facilities, what happens is that helium is then removed from the reservoir, it passes through the helium enrichment unit at Cliffside, and then is pumped down the BLM pipeline system. And it is metered at our various plants. And that is where we actually take physical possession of it through our facilities. But until that point it sits in, as Mr. Nelson said, the bank account underground in the Cliffside Reservoir. There is a big distinction.

So, a portion of the helium underground is currently owned by people who have paid and taken technical ownership of that helium, but we only receive delivery substantially later in our plants down the pipeline.

Mr. LAMBORN. OK, thank you.

Mr. HAINES. There is a metering system there, and that is where all the accounting is reconciled.

Mr. LAMBORN. OK, thank you. Moving on——

Mr. JOYNER. And, Mr. Chairman, if I could add just a——

Mr. LAMBORN. Certainly.

Mr. JOYNER [continuing]. Clarification point——

Mr. LAMBORN. Yes.

Mr. JOYNER [continuing]. And tie it back to legislation, that is where the disconnect occurs, is that buyers can purchase helium in the ground, but it is only a fraction of that gross gas. It hasn't been separated yet. So you can't utilize that until it has gone through the enrichment unit and been processed and then delivered in the pipeline.

So, that is where the recommendations come in to link your purchase with the delivery of the actual helium in the pipeline. Because if you don't have that access, just buying the fraction of the

percentage of helium that is in the ground is something you can't utilize.

Mr. LAMBORN. OK. Well, that——

Mr. HAINES. Sorry, Mr. Chairman.

Mr. LAMBORN. Yes?

Mr. HAINES. Just one more point about that, and that is the rate of delivery of gas from the field is now declining. So the ability for the BLM to deliver gas over the next 8 years is going to be diminishing quite substantially. And that is one of the issues here about would new investments take place, et cetera.

Mr. LAMBORN. Mr. Kaltrider, continuing on here, in your testimony you said the 30 percent cap would threaten the delivery to in-kind users. Since the in-kind distribution is separate in the bill from the auction process, can you explain why the 30 percent cap would have an impact on your ability to serve in-kind users?

Mr. KALTRIDER. Well, today, the way it functions today, you basically use inventory. A refinery uses its own inventory to satisfy in-kind requirements for the purpose of the Federal Government.

In the future, there will be a couple of things going on. At 30 percent, because it is less than what we get today, we won't have enough inventory floats to satisfy all of our customers. And the way this happens is you use your inventory and then the government replenishes your inventory at a later date. And with the depletion of the reservoir and the fewer molecules coming in to the reservoir, that depletion rate is such that we will not be able to get our inventory back up over time, like we have in the past when there has been a perfectly acceptable amount of flow into the reservoir.

Mr. LAMBORN. OK, thank you. At this point I would like to recognize Mr. Holt.

Dr. HOLT. Thank you. Thank you, Mr. Chairman. You know, as we seek to put more transparency and more market forcing into the process, I am still left with concerns about whether we have done an adequate job in guaranteeing the supply that will be needed by Federal users and to meet other domestic needs, commercial domestic needs too, and whether we are doing enough to address long-term supply issues. It may take other legislation to do long-term supply, or maybe there are ways to build it into here. But those are certainly a couple of concerns that I hope we can address over coming weeks.

Let me go down the line to users, distributors and refiners. Do you agree with the conclusion of the National Academy of Sciences, that "The BLM should adopt policies that open its crude helium sales to a broader array of buyers, and make the process for establishing the selling price of crude helium more transparent"?

Yes. Let's just go left to right—my left to right. Yes, if you would, please.

Mr. JOYNER. OK. Thank you, sir.

Dr. HOLT. Thank you.

Mr. JOYNER. Yes, we agree with that recommendation for a number of reasons. One, it helps you, the legislation, achieve the goal of getting a fair market price and return on the taxpayer's investment. Second, it promotes competition, and competition is the basis of what is driving our economy, not captive access to the U.S. resource. So it really triggers that competitive factor that drives the

benefit for the end user to get reliable supply and get competition to gain their business.

Dr. HOLT. Yes, next?

Mr. THOMAN. Similarly, we agree with the National Academy of Sciences report. It recommends for greater access and a fair price. We think with greater access, we are very focused on a secure domestic supply. There is the helium available to create a secure domestic supply. And with a fair price for that helium, perhaps more of that conservation will take place, as well. And the pressure on the helium that is being produced——

Dr. HOLT. Thank you. Mr. Lynch?

Mr. THOMAN [continuing]. From our BLM fields, won't be exported.

Dr. HOLT. Sorry, yes, Mr. Lynch?

Mr. LYNCH. Yes, we agree.

Dr. HOLT. Yes? OK.

Mr. LYNCH. In short. The question is, does the bill adequately achieve those goals, and as I testified, we think it has severe shortcoming in that regard.

Dr. HOLT. Yes. Mr. Nelson?

Mr. NELSON. Mr. Holt, we agree with the portion of the recommendation that the BLM should be sold at a market-based price. What we do not agree with is that the current bill addresses all of the other issues of reliable supply to customers.

Dr. HOLT. Right, as you testified. Mr. Haines for Linde?

Mr. HAINES. Yes, Mr. Holt, we agree in regard to opening up the price to a market price. We are very comfortable with that.

Mr. KALTRIDER. Again——

Mr. HAINES. Sorry. And as far as opening to a wider array of buyers, we think that could be accommodated properly if the legislation were written in the right way.

Dr. HOLT. Thank you.

Mr. KALTRIDER. Again, consistent with our testimony—with my testimony—I think Praxair has put forth a proposal that would endorse an auction of a commercially significant amount of helium. I would like to stress that access to the BLM does not create additional helium molecules, and that if you really are interested in——

Dr. HOLT. And so let me—yes, let me——

Mr. KALTRIDER. If you are really interested in expediting investment and that, in finding more helium and that, you probably need to look at streamlining permitting requirements and other things that can aid in——

Dr. HOLT. Well, with about 10 seconds each of you, do you agree with the National Academy of Sciences' finding that BLM's pricing of crude helium may slow efforts to aggressively pursue alternative helium sources and negatively impact the evolution of the helium market?

Mr. JOYNER. I think beyond the pricing, the capacity of the reserve has driven some of the other producers to not pursue other sources, because they have exclusive access to one of the world's largest sources, as opposed to others who have been at the forefront of pursuing, as Air Liquide has, other sources here and globally, as a result of not being able to have access. It is more of an access issue, I think, than driven by price.

Mr. THOMAN. Yes. Folks like us who don't have the access to the fields are forced to look for other sources and the higher pricing will stimulate alternative sources.

Dr. HOLT. Since we have run out of time—I am sorry—let me jump to, I guess, Mr. Haines, so we have some input from the refiners on that.

Mr. HAINES. Thank you, Mr. Holt. We do not really believe that the price, the crude price of helium, really will drive new helium resource development. We believe that is largely because of natural gas, because most helium discoveries are related to natural gas. And it is actually the natural gas resource development that is key for helium resource development.

Dr. HOLT. Thank you.

Mr. LAMBORN. OK. Representative Lummis.

Ms. LUMMIS. Well, thank you, Mr. Chairman. I want to ask a question of Mr. Kaltrider and Mr. Lynch, because you have warned us about disruptions to supply chain and price stability. And both Praxair and Matheson have considerable investments in my State of Wyoming.

So, obviously, that is not the intent of this bill, to cause supply chain and price instability. So I am curious. Can you help me understand why you are concerned about that? Because we didn't hear that from the end users and we didn't hear that from our first panel that were mostly government folks. So just curious about why that is.

Mr. LYNCH. OK. Well, as I mentioned, the helium industry is very capital-intensive, and it requires very expensive, specialized equipment that requires a large investment and it takes a long time to earn the money back on it. And the helium supply and sourcing contracts, as the industry has developed, have developed to be of a long-term nature, so that companies can make long-term investments to earn the money back appropriately.

If we were talking about a very small amount of helium being put up for auction every 6 months, there is always room for a bit of spot market. But you are talking about a huge proportion of the world's helium supply being chased after every 6 months, meaning no supplier will know if he is going to have access to the helium he needs to fulfill contracts 6 months from now. No buyer will know if the supplier he is dealing with will be able to provide him helium 6 months from now, or at what price. That makes long-term investment and planning impossible.

Ms. LUMMIS. Yes. So if you were designing this system, and you could have a portion be spot market subject to auction and another portion be withheld from that auction system, what percentage would you choose?

Mr. LYNCH. Well, we have put forward a proposal of 80 percent: 80 percent would be run similarly to the way it is today, allocated to the refiners, the only difference being the price would be a market-based price derived from a survey; 20 percent available to non-refiners.

But the key to making that work, as we have mentioned, is it does no good to bid on crude helium if you can't turn it into pure helium. So any auction system that allows greater bidding that doesn't somehow include a mechanism to incentivize the refiners to

purify it is a dead end, and nobody is going to bid on it once they realize that, like us, they will have crude helium sitting in the ground for 6 or 7 years with nowhere for it to go.

Ms. LUMMIS. A question about price. And I want to give you a chance to answer that same question, but I want you to add another into the mix, and it is this. You know, earlier we saw this GAO chart that shows that grade A helium is priced around $160. Is that price range reflective of what you charge your customers? Anybody.

Mr. KALTRIDER. That is obviously very confidential information, right?

[Laughter.]

Mr. KALTRIDER. But it is not—and there are different levels of customers, right? There are very extremely large users, there are retail users. So it is very difficult to say whether that is representative of what you would call the "end market," because there is a very wide variation in the end market.

Ms. LUMMIS. And is the end market buyer buying a different quality of product that would differentiate price?

Mr. KALTRIDER. In some cases. In most cases, the end market buyer is buying, if it is an extremely large user, they are really paying for reliability, continuity of supply——

Ms. LUMMIS. Yes, I——

Mr. KALTRIDER. OK. Diversification of your sources as a supplier is very important to the end use buyer.

In the case of Mr. Page and his customers that are primarily using for balloons, there is a way you can provide an intermediate grade of helium that is not five nines and that product, if it were available, could be sold at some type of a price in between, I am assuming. So it does vary widely in the packaging, the commercial investment, the quantity, the length of time, the criticality of the product. Many, many, many things.

Ms. LUMMIS. OK. Does anybody else want to comment on my price question?

Mr. NELSON. If I can just add, please, that I am not specifically familiar with the data that is represented in the graph, but based on the comments of Mr. Spisak earlier, it does appear that the graph is comparing unlike substances. I don't want to call them apples and oranges, but there is a comparison between crude helium sold in the ground, that we described earlier, with end refined products that could be in cylinders or multiple different packages. I think if you drew a similar graph comparing the price of crude oil to maybe the price of gasoline sold at a pump, you might see a similar type of a relationship.

Ms. LUMMIS. OK. Anyone else want to weigh in on any of this series of questions?

Mr. HAINES. In terms of that graph, so we are talking about crude helium at the bottom versus a retail price. Now, we have very extensive infrastructure, as Mr. Lynch mentioned, which enables us to remove the helium from our facilities to its points of use around the world. So we have a very, very complex supply chain comprising of hundreds of very specialized cryogenic ISO containers that transport the helium in a liquid form to a number of transfills. At that transfill the liquid is then vaporized into a gas-

eous form, it is repackaged into cylinders or dewars or some other form—tube trailers, perhaps. Then it is delivered the customer. So, there is a tremendous value chain——

Ms. LUMMIS. Yes.

Mr. HAINES [continuing]. That takes that product from the crude helium that is purchased at the BLM facility to the end customer that could be in New York City.

Ms. LUMMIS. Can you tell me whether this proposed auction system——

Mr. LAMBORN. Representative, let me remind you that we are going to have one more round.

Ms. LUMMIS. Oh, OK.

Mr. LAMBORN. OK.

Ms. LUMMIS. Thank you. I got carried away. I will——

Mr. LAMBORN. OK, but save that question. OK. And, Mr. Cartwright, and then we will start our second and, I think, final round.

Mr. CARTWRIGHT. Thank you, Mr. Chairman. Mr. Nelson, in your testimony you indicate a preference for a partial auction of the BLM helium. Is that correct?

Mr. NELSON. That is correct, sir, yes.

Mr. CARTWRIGHT. And I want to say Mr. Lynch just testified about an 80/20 split. Was that the same topic?

Mr. NELSON. I believe the proposals are similar, yes.

Mr. CARTWRIGHT. Yes, and I wanted to ask you, Mr. Nelson, was that about the proportion you were thinking, 80/20?

Mr. NELSON. My proposal is that today we have an allocated volume and a non-allocated volume. The non-allocated volume today is 6 percent of the BLM. The BLM has had the authority to change that volume over time. They started at 10 percent. All of the helium wasn't sold. They lowered it to 5 percent for a while, and then they ultimately raised it to 6 percent, and it has been at 6 percent now for quite some time.

Today, as we discussed earlier, there is a shortage of helium today. And that 6 percent effectively today is not a guaranteed product for any of the refiners. So our proposal is that you would start by auctioning off the non-allocated helium at the percentage that it is today. And potentially, as new sources of helium come on, that percentage could change. But changing the percentage today will disrupt existing supply contracts. Because, effectively, it is a redistribution of a fixed amount of helium that exists today.

Mr. CARTWRIGHT. All right, so that the percentage that you are comfortable auctioning off at this point would be the non-allocated, in other words, the 6 percent, but that percentage could go up.

Mr. NELSON. That percentage could change, as new volumes of helium come on the marketplace, in order to minimize disruption.

Mr. CARTWRIGHT. All right. And the other question I—thank you for that. The other question I had was about the production of helium. Helium is a byproduct from natural gas. Those of us in Pennsylvania know a lot about hydraulic fracturing, which produces an awful lot of natural gas.

I asked this of the last panel, who were the end users of helium and didn't know a lot about how to mine helium from natural gas. But I did hear the statement that, really, fracking, or hydraulic fracturing, doesn't produce usable helium. Is, and I will throw this

open to the whole panel, is that true? Are there things that we can to do take advantage of the burgeoning field of hydraulic fracturing in the helium industry?

Mr. KALTRIDER. Yes, I think I can speak to that. Hydraulic fracking, obviously, is a very efficient preferred method of extracting natural gas, natural gas liquids, and, in some cases, petroleum from unconventional shale reserves. OK?

Up to this point, helium has not been discovered in shale deposits, OK? Helium is typically found in natural gas deposits that have a high nitrogen content. In some cases it is found in deposits that have a high CO_2 content. In some cases, as in Wyoming, it is found in a reservoir that has a very high CO_2 content. Extremely complex gas to separate, costs billions of dollars of investment, as Exxon has made. It is pretty complex. But at this point, it has not been found in shale gas and shale reserves.

Mr. CARTWRIGHT. I thank you for that. And, of course, the other effect of this discovery of the shale gas and the fracking industry has been to lower the price of natural gas. And can you comment on how the lower price of natural gas overall impacts the helium industry?

Mr. JOYNER. I can speak to that. At this stage it hasn't affected the availability of helium. There is still a lot of natural gas being extracted outside of the shale gas, so we haven't seen reduced levels there. It could affect exploration of more traditional natural gas, where we do tend to find the higher concentrations of helium over time.

On the flip side, with the existing natural gas producers, monetizing the helium should become more and more attractive to express some joint interest between those producers and the helium industries to work together to develop even lower purity streams in those situations.

Mr. HAINES. I would like to add to that. Unfortunately, as the natural gas price has come down, exploration for, as we say, conventional gas reservoirs has actually declined substantially. If you look at the rig counts for natural gas, they have diminished substantially. And on the counter to that, oil rigs have increased as the oil price has gone up.

Unfortunately, this means that the reservoirs that are likely to contain helium are just not being explored that much. But that is a function of the natural gas price. It is not a function of the helium price. And I think we have tried to draw that distinction.

Mr. CARTWRIGHT. Well, I thank you for your comments.

Mr. LAMBORN. OK. I want to thank the panel so far for their patience and for the expertise that they have shared with us. We will do our final round of questions here, assuming we can get through everything we need to, and I think we are to that point. I will start.

For the three refiners, in regards to tolling agreements you may have heard, but there was some testimony earlier about how some people have attempted to enter into tolling agreements but have not been successful. So what is the basis that you use for deciding whether to honor these requests for tolling agreements? And why have some of these people who testified earlier been unsuccessful in those attempts? For any or all three of the refiners.

Mr. KALTRIDER. In the past I can speak plainly that we have entered into tolling agreements. And, in fact, some of those have been longer term, meaning a year or more. The reason we were able to do that was there was sufficient supply coming from the BLM, such that our allocation was met, and that we had additional molecules that the non-refiner who was asking us to toll that had access to those molecules—so, in other words, our allocation from the BLM would not have been impacted, and we were able to process the molecules they had access to. And, in fact, we did that.

The problem recently in this last year to 18 months, with the exacerbated shortage, has been the BLM has been unable to even meet the 3 refiners' requirements in their nominations. And, therefore, there is no capacity, there is tolling capacity, there is refining capacity, but there is not enough molecules to even meet the minimal demands that the refiners have contractually with their customers.

Mr. LAMBORN. Thank you. Either of you other two? Anything to add to that, or a different——

Mr. NELSON. Yes, Mr. Chairman. That explanation was very good. Air Products has had tolling agreements with both customers as well as competitors in the past. But during this recent shortage period, we just have not had the capacity to enter into any tolling agreements.

Again, there was refining capacity available at our plants, but no ability to move crude helium to the plants. So, without that ability to move the crude helium, we cannot enter into any agreement.

Mr. JOYNER. Would you like a non-refiner perspective on that?

Mr. HAINES. Mr. Chairman?

Mr. LAMBORN. Yes, but one second. Let the gentleman from Linde speak also, and then we will hear from you.

Mr. HAINES. Yes. So we have had tolling agreements in the past, as well, as Linde. And for us, it is about two things. It is about access to molecules, it is also about ensuring that it is the right commercial terms. That means it has to make sense for both parties in this buy-sell arrangement.

We have come up with a proposal that we believe would help the bill, to encourage refiners to toll. And that is we have talked about allocating product to go with product sold. And that would mean that then refiners would be indifferent to this, and they would actually be prepared to compete for tolling services. And we think that is a good idea. And we just don't think it is going to be as much of a problem as you believe it will be. But this is a change from how you have currently structured it.

Mr. LAMBORN. OK, thank you. Mr. Joyner, did you want to say something?

Mr. JOYNER. Yes. Thanks, Mr. Chairman. The way the structure was set up with the captive access and the allocations going entirely to the refineries, it actually set up a disincentive for them to toll. By not tolling, it allowed them to not only get the 94 percent, but then nobody else was going to buy the other 6 percent because they couldn't utilize it and get it out of the reserve. So it is somewhat of a self-fulfilling policy in that situation.

So the key, again, is linking that delivery access and encouraging and incentivizing tolling, as we had proposed, similar to what the BLM MOU process is today that I talked about earlier.

And it might be a good time to just quickly address the analogy about the car manufacturer, which is clever, but clearly irrelevant to this situation. That is private manufacturers, they are purchasing private materials. It is private transportation to produce cars. So to even draw a parallel between that and a government reserve, you would have to consider a situation where the government owned a third of the world's engines, and it gets farther and farther removed from being a relevant analogy at all, as compared to helium.

Mr. LAMBORN. OK, thank you. Last, for the three refiners, you saw this chart earlier that GAO put out. And the estimate in there is that it is roughly 60 or so dollars per thousand cubic feet versus an estimated price received by the refiner of around $160 to $180. So there is about a 2.5-to-1 ratio, if I am reading those numbers correctly. And yet GAO is estimating because they don't really have access to market prices between, admittedly, confidential contracts.

Can you comment on whether or not this GAO estimate is correct? Would you be willing to comment on that?

Mr. HAINES. Mr. Chairman, I don't think the crude price is accurate, actually. It is——

Mr. LAMBORN. Excuse me?

Mr. HAINES. The crude price, Mr. Chairman, is over $80 currently.

Mr. LAMBORN. OK. Well, it is for 2012, so it is only through last year, or until last year, 2012. So this year is not even on there.

Mr. HAINES. Again, I think the explanation that I made about when you deliver the product to the end customer there is a tremendous amount of extra cost involved in refining it, processing it, repackaging it, delivering it, there is a lot of extra cost involved. Plus there is a profit margin. So, absolutely. To compare crude helium to a delivered product, I think, is literally not the correct comparison.

Mr. LAMBORN. And given that, is the GAO estimate in the ballpark, in the light blue at the top there? And I am not trying to squeeze propriety information out of folks. And I do honor the need to recoup costs and have a legitimate profit. There is no question about that. But——

Mr. NELSON. Mr. Chairman, thank you very much for recognizing that the six of us are sitting here as competitors, and disclosing market-based——

Mr. LAMBORN. Yes, and this is a very sensitive question I am asking.

Mr. NELSON [continuing]. Pricing is very difficult for us to do. I would offer, and again, I know the government panel testified first. And I am not sure if the GAO looked at this information or not. But today, and I think starting back in 2011, the BLM began to change their policy for selling crude helium each and every quarter. And as part of the process of bidding on that helium, private industry, the allocated purchasers, not the allocated, so on this side of the table, we had to actually answer questions, a confidential survey by the BLM on pricing, how much we are paying for the aver-

age price of crude, how much we are selling liquid helium for, in an attempt to gather that market data to help them determine how to set the market price.

So, some of that information is certainly available to the BLM. I am not sure if the GAO had looked at that and had incorporated any of that data into this chart or not.

Mr. LAMBORN. Well, thank you very much. Thank you all very much.

Mr. KALTRIDER. If I cold just——

Mr. LAMBORN. Mr. Kaltrider?

Mr. KALTRIDER [continuing]. Add one thing, Mr. Chairman, I think Mr. Nelson had made a very important point, in that we participated as well in that and did not give index data, but actual data on the changes in our slate of crude suppliers to us, which encompass both BLM and private. And that, in fact, is the best, probably the closest proxy that the Committee could use to determine whether the BLM is charging the "market price" for crude product today, rather than coming up with some theoretical refined price and then back-extrapolating into that. If I could make that comment.

Mr. LAMBORN. OK. Thank you very much. Now, Mr. Holt.

Dr. HOLT. Thank you, Mr. Chairman. Your exchange there just shows, really, how far we are from a transparent market-based system here.

You know, at least one of the companies here announced publicly, I guess, as I understand it, a 30 percent increase in prices over the last year or so, whereas the crude changed by, I guess, 10 percent or less, which suggests that maybe the price of crude is not the principal ingredient in calculating the distributed price.

In any case, let me move to something that I am really kind of puzzled about and I want to make sure that this legislation handles this matter correctly and that is the matter of the semi-annual auctions and the long-term contracts. As I understand it, what we have proposed here, I mean what we intended to propose here, is that there would be fairly frequent auctions, 6 months or so, but you could take delivery over some period of years.

Let me ask, I will choose a couple of you. Let me ask what do you mean by a long-term contract? Is it much longer than a couple of years? Doesn't that provide the predictability that the customers need as well as the suppliers? Let me ask Mr. Nelson and Mr. Lynch—or, well, OK, I guess Mr. Thoman wanted to speak to that.

Mr. NELSON. Certainly, Mr. Holt. When we talk about long-term contracts, it again will depend on the customer and the relationship, but they could be anywhere from 3 to 5 to 7 years are typically what we would gauge as a long-term contract.

Dr. HOLT. But isn't it going to be affected as much by the declining volume of the reservoir and what you call the sticky molecules or whatever, as much as it is how often the auctions are held?

Mr. NELSON. I really appreciate you highlighting this point, and I tried to bring it out both in my written and my oral testimony. Going forward, the sale of helium needs to be married with the delivery of helium, whether it is an allocated sale or even an auction of helium. The delivery has to be married with the sale activity.

I use the analogy of a garden hose. You have a garden hose and there is water flowing out of it and it is flowing until the well runs dry. If you win product in an auction, you run to the garden hose with your pail and you fill it up and then the next guy fills up his pail. You can't just let the helium sit in the ground and try to pull it out 1 year or 2 years later, because whoever has won the subsequent auction is going to want to remove their helium, and so forth. And the BLM has limited capacity, just like a garden hose has limited capacity.

So, in the legislation today it doesn't really square up, the sales activity with the delivery. And it absolutely has to be addressed.

Dr. HOLT. Mr. Thoman?

Mr. THOMAN. Yes, this is clearly a——

Dr. HOLT. Or Thoman, I beg your pardon.

Mr. THOMAN. That is OK. That is all right. It is a strategic resource that is in short supply. The frequent auctions every 6 months, you will have an ebb and flow because, as Mr. Nelson just said, you wouldn't buy this product and be able to over-buy and then be able to siphon off at some percentage of what you bought to satisfy your demand. You would be bidding in auction for the amount that you need to satisfy your demand. And with an ebb and flow of whether you are going to win or you are not going to win, you are going to get the volume that you need or something less, would create a lot of supply uncertainty.

Dr. HOLT. But does this legislation introduce any more problems? There is already, I think, a 1-year backlog or more. It seems to me that is going from purchase to extraction and delivery. Isn't that going to become worse for physical reasons?

Mr. THOMAN. I think it——

Dr. HOLT. I don't know whether "worse" is the right term. Isn't that going to become longer for physical reasons?

Mr. THOMAN. The four points that we mentioned in our testimony, those four points needing to come together in the bill will create more supply security than there is today. As constructed today, our industry has changed a whole lot since the last years, since the 1996 bill was enacted. For example, Airgas bought the packaged gas businesses, the cylinder and dewar-type businesses, from two of the refiners. So we have the customers, the mode of supply that the customers use helium in, however we don't have access to the supply.

Mr. KALTRIDER. The reality is there is a physical reality to your question. If you allow non-refining bidders, or any bidder to access in an auction, and allow them a 24-month period to bring that crude to market, which is what this bill suggests, what you will end up having happen is, as the reservoir depletes, the reservoir pressure is depleting, you will physically be unable to deliver those molecules.

So, you will be able to deliver some, but you won't be able to deliver probably what the bidder bid on, OK, because there is just not enough pressure. It is depleting. And so the number of helium molecules——

Dr. HOLT. That is sort of what I was getting at. So as we move——

Mr. KALTRIDER. Yes, and so when I use——

Dr. HOLT. As we move forward, long-term contracts become less and less meaningful.

Mr. KALTRIDER. No, I would respectfully disagree. Again, we are talking about percentages, very large percentages, and this is actually suggesting a 100 percent auction. Now, if we arrive at a much more commercially reasonable amount of auction, then I agree. The impact of the more frequent auctions is lessened.

Dr. HOLT. It is complicated, isn't it, Mr. Chairman?

Mr. LAMBORN. It is not only complicated, but it is unique. For instance, I am struck by the fact—where is that chart, Mandy? Oh, here it is, the diagram that Mr. Nelson gave out. The Cliffside helium plant is privately owned and government operated. And I have said this before. I have heard of a lot of operations that are government owned and private operated, but I have never heard of any other facility in the country that is privately owned and government operated.

So it is a unique industry, it is a unique commodity. Thank you for coming today and lending your expertise. We appreciate your testimony.

Members of the Committee may have additional questions that they would ask you in writing. I would ask that you would respond to those, should you get such a question.

I would also, with unanimous consent, like to put into the record a document, a statement received from the Gases and Welding Distributors Association.

[No response.]

Mr. LAMBORN. Seeing no objection, that will be put into the record.

[The statement submitted by the Gases and Welding Distributors Association, Inc., follows:]

Statement submitted for the record by the Gases and Welding Distributors Association ("GAWDA")

Mr. Chairman and Members of the Committee:

The Gases and Welding Distributors Association ("GAWDA") is a national trade association representing the interests of some 500 companies that distribute compressed and liquefied gases and related welding equipment, and includes some 300 additional companies that supply products or services to the gases and welding industry. GAWDA distributor members sell a variety of products, including helium, oxygen, argon, nitrogen and carbon dioxide, as well as specialty gases and mixtures, to customers involved in manufacturing, construction, welding, research, health care, and biomedical engineering.

Most GAWDA members are small businesses. Approximately 85 percent of GAWDA distributors have less than $10 million in annual gross revenue, so they have limited leverage in negotiating supply agreements for products. In the vast majority of cases, GAWDA distributors will contract exclusively with a single manufacturer (or in the case of helium, a refiner) for a comprehensive menu of gas products. The contract generally will provide all of the distributor's needs for all of those gases.

In addition, the distributor will generally contract with its customers in an exclusive "requirements" arrangement to supply all of the customer's needs for a variety of gases as well. A small distributor might have a couple of dozen contracts to supply helium and other gases to customers, while a large distributor might have several hundred or more of these requirements contracts.

The GAWDA distributor will typically purchase bulk helium in gaseous form from a refiner; the distributor will then repackage the helium into compressed gas cylinders and deliver them to customers for their use.

GAWDA appreciates the efforts that the committee has made to develop legislation to complete the privatization of the Federal Helium Reserve outside of Amaillo, Texas. We understand the urgency of reauthorizing the sale of helium by the Bu-

reau of Land Management by October of this year to keep the program from expiring, and GAWDA does not want the domestic supply of helium, which amounts to some 50 percent of the U.S. domestic supply and 30 percent of the entire world supply, to go untapped.

GAWDA also understands that the BLM has not obtained market rates of return for the sales of helium to date, and we appreciate that the federal government should earn an appropriate return for the sale of this asset in the marketplace. We agree that any revision to the BLM sales program should include a structure to generate market pricing for crude helium to refiners, and GAWDA does not oppose the provisions in H.R. 527 to develop a truly market-based pricing mechanism.

GAWDA distributors are concerned, however, about the effect of the remedies fashioned in H.R. 527 on the stability of the existing market for helium, particularly as they affect the ability to meet contractual obligations for product supply. Section 3(a) of the bill would revise section 6(a) of the Helium Act, 50 U.S.C. § 167d, to state that the BLM shall carry out the sale of crude helium from the Federal Helium Reserve "with minimum market disruption," but we remain concerned that a quarterly or periodic auction approach as envisioned in H.R. 527 will interfere with current contracts between refiners and distributors, and between distributors and their end user customers.

By establishing a periodic auction mechanism under which any party may bid, at least for certain tranches of product, the BLM would set up a spot market for helium. If an established refiner is not able to secure all of the crude helium that it requires to meet the supply obligations set out in its contracts, then some distributor customers will receive less than their contractual allotments of helium, or perhaps none at all. The distributor will be forced to seek other sources of supply, presumably only if a *force majeure* clause in the agreement allows the distributor to obtain replacement product from another supplier.

But the contracts between distributors and gas suppliers are exclusive for all of the gas products together, and it is difficult to predict how a disruption in the ability to supply the required amounts of helium in one quarter will affect the distributor's contractual obligation to purchase, and the manufacturer's contractual obligation to sell, all of the other gases contemplated in the agreement.

Similarly, the distributor unable to obtain all of its requirements for helium in a quarter in turn could end up defaulting on its contracts to supply helium to its customers. The distributor's customers might be forced to seek alternative supplies of helium for at least part of their needs for that period, and to pay above market prices to the winning auction bidder(s) to ensure a continuous supply of product. This also raises questions of the effect on the contractual obligations to sell and purchase the other gases in the contracts.

The same scenario could be replayed each quarter when the auction is renewed. Refiners, distributors and end users will not know which parties will have adequate supplies of helium to meet existing contractual demands. This will generate legal questions about contract default, partial product allocations, mitigation of damages, and obligations to cure, as well as commercial questions about which parties may be able to meet supply obligations on a consistent basis. The distributor will have to resolve these issues with each customer for that auction period; when another auction takes place, and different sales volumes of helium are awarded by BLM to new bidders, the distributors will have to go through the same legal and commercial exercise to ensure that each of their customers will receive enough product to meet its requirements.

An unreliable product stream for helium will make it difficult for any distributor to entertain long-term, exclusive supply arrangements with customers that foster stable commercial relations and support economic growth.

GAWDA appreciates that the sponsors of H.R. 527 have attempted to moderate some of the disruptive effects of the auction. For example, the bill would requiring all bidders on the first tranche, for 60 percent of the volume to be sold, to show that they either have adequate refining capacity or tolling agreements for refining in place should their bids be successful. But the second tranche of helium sales, for 20 percent of the volume to be sold, is open to "any person." These bidders are not required to certify that they have refining capacity or contracts in place; they are merely required to state that they are "seeking to purchase helium for their own use, for refining, or for delivery to users." Section 3(a) of H.R. 527, amending section 3(d)(3)(B)(i) of the Helium Act. This could allow investors to purchase and hold helium for speculation or to remove it from the U.S. market entirely. Moreover, regardless of which parties are allowed to bid on or purchase helium, a quarterly auction with varying winning bidders will force distributors to find replacement product in a spot market if their suppliers are not successful bidders.

GAWDA fears that an unstable auction mechanism affecting upwards half of the domestic U.S. helium supply could create havoc not merely for refiners and distributors, but also for the industries that rely heavily on helium as a component of their operations. Health care providers, manufacturers of semiconductors and other high tech products, metal fabricators, universities and other research facilities, and even party balloon suppliers, will no longer have a consistent and stable source of helium from their distributors.

As this legislation moves forward, GAWDA asks that the committee consider its potential disruptive effect on the markets for both crude and refined helium and the end users that rely on this product. We support the committee's efforts to pass legislation this year to continue the sale of the Federal Helium Reserve, and at fair market prices, but we remain unconvinced that a periodic auction approach as outlined in H.R. 527 will encourage a sufficiently reliable supply of helium for the U.S. economy.

Respectfully submitted,

Craig Wood, President
Gases and Welding Distributors Association, Inc.
8669 Doral Blvd., Suite 130
Doral, Florida 33166

Mr. LAMBORN. And if there is no other further business before the Committee, without objection the Committee stands adjourned.

[Whereupon, at 1:27 p.m., the Committee was adjourned.]

[Additional material submitted for the record follows:]

Statement of The Honorable Raul Ruiz, a Representative in Congress from the State of California

Thank you Mr. Chairman. I am pleased to be here today with my colleagues and have the opportunity to attend this hearing. It is important that we address ways in which we can prevent the continuing helium shortage. I hope today, we get some further insight from our witnesses on how we can work together to address this concern. Helium is a mainstay in the medical industry. Helium is used to cool MRI scanners, as a doctor I can assure that this need is critical to provide life-saving medical imaging and to prevent an increase in costs for patients. I look forward to working with my colleagues in a bipartisan manner on this and other issues that come through the Committee. Finally, I look forward to discussing H.R. 527, the Responsible Helium Administration and Stewardship Act. Thank you and I yield back the balance of my time.

The documents listed below have been retained in the Committee's official files.

Mr. Page:

- Helium and Balloons Across America Letter to the BLM 11 28 07
- BLM Office Made Improper Deals With Helium Refiners, Washington Post Article, Friday, August 22, 2008
- Office of the Inspector General's Audit of the BLM's Helium Program, November 2012

Mr. Nelson:

- Air Products Constitutional Analysis of H.R. 527

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