NICHOLAS INSTITUTE FOR ENVIRONMENTAL POLICY SOLUTIONS
DUKE UNIVERSITY

TESTIMONY OF TIMOTHY H. PROFETA

DIRECTOR

NICHOLAS INSTITUTE FOR ENVIRONMENTAL POLICY SOLUTIONS

DUKE UNIVERSITY

before the

U.S. SENATE COMMITTEE ON

AGRICULTURE, NUTRITION AND FORESTRY

September 9, 2009

Chairman Harkin, Senator Chambliss, and members of the committee, thank you for the opportunity to testify before the Committee today. It is an honor to be here.

Four years ago, I left Washington to found the Nicholas Institute for Environmental Policy Solutions at Duke University. The Institute is intended to be a two-way bridge between the knowledge and convening power of Duke and decision-makers such as yourselves. The Institute has focused its resources on the key environmental challenges facing our planet, and no topic has demanded greater attention than global climate change.

One area in which the Institute has recently focused is designing the financial market that would be created by a cap-and-trade system for greenhouse gases. It is clear that the success of this policy approach hinges, substantively and politically, on whether the market will operate in a way that is fair, efficient and responsive to the lessons learned from the current financial crisis. The Institute staff has worked with our Visiting Fellow Jon Anda to launch our Carbon Market Initiative, engaging with a number of faculty from Duke University's Fuqua School of Business and Law School to assess the key elements of a successful carbon market – from financial market design, to accounting, to auction design. Three papers are due to be published in October, led by Professors Vish Viswanathan, Leslie Marx and Katherine Schipper, that will more deeply investigate all of those topics.

The Benefits of a Market-Based Climate Policy

As I noted, this testimony is focused on the issues and concerns regarding the design of the greenhouse gas market. Given the financial market failures in recent years, it is understandable that a market approach should not be viewed as a foregone conclusion. However, I would submit that, given the Nicholas Institute's evaluation of the numerous policy options proposed to

address climate change, I believe the market approach remains an effective means to achieve the environmental goals of greenhouse gas emission reductions at the lowest cost.

Cost, in the end, is the determining factor. No sector of the economy is more attuned to these issues than the agricultural producers who are the constituents of this committee. As an aside, let me note that the Nicholas Institute this week released a report co-authored by several leading agricultural economists assessing the impact of a carbon market on farm incomes. The study found that net flow of GHG revenue and indirect commodity market revenues for farmers far outweigh increased operating costs. The study also forecast some losses in economic welfare to consumers and agricultural processors. However, benefits to crop and livestock producers far outweigh these economic losses, signaling gains to the sector as a whole. If done the right way, agriculture can be made a winner in climate legislation.

But no matter what the models show, no one would dispute that we should adopt the policy that achieves our goals at the lowest possible cost. History demonstrates that the market is the best means to accomplish this objective. In the most famous example, Congress mandated in the 1990 Clean Air Act that utilities engage in what was then called "emissions trading" to reduce sulfur dioxide pollution – a major contributor to acid rain. The 1990 Clean Air Act amendments, which launched the program, are a resounding success—achieving the environmental goals at 20 to 30 percent of the predicted cost.

Market-based systems to address environmental concerns allow both the federal government and private enterprise to take advantage of their respective strengths. The U.S. government is in the best position to set and enforce a "cap", or limit, on national GHG emissions. Capped entities determine for themselves the least-cost manner of complying with the emissions limits.

Under a cap-and-trade program, a GHG "allowance" is created for each ton of capped emissions. The allowances are fungible and can be traded among market participants. At the end of each compliance period, regulated firms surrender allowances to the government equivalent to their emissions. The program gives firms flexibility, either to reduce their own emissions or to buy allowances from another firm. This process minimizes the overall economic cost of the program, as it provides an incentive for firms with the lowest marginal cost of abatement to make the cheapest reductions first. Cap-and-trade systems are at the heart of the major legislative proposals to address climate change, including the American Clean Energy and Security Act passed by the U.S. House of Representatives earlier this year and the Climate Security Act that was before the Senate in June of 2008.

Without a market mechanism, the government must have perfect foresight of the costs of emission reductions and the circumstances that will affect those costs (such as when technologies will be available) in order to deploy resources most efficiently. Providing covered entities with flexibility in how they trade allowances among themselves may be especially important in this circumstance, as long-term compliance with the declining cap will depend on the emergence of new technologies.

Lessons Learned from Recent Market Failures

Much of the market's cost-reducing benefits, however, could be weakened if the market does not operate transparently and efficiently, thereby creating a sizeable gap between the price of greenhouse gas abatement and the price in the market. Americans know all too well that such imperfect markets occur, as the debate on climate change legislation takes place in the shadow of glaring examples of market failures over the past year and a half. These failures, however, can also provide important lessons that Congress can apply to the creation of a carbon market.

1. Petroleum price spikes – The spikes in the petroleum markets during the summer of 2008 highlight the importance of market transparency and adequate regulatory jurisdiction. No federal agency has comprehensive authority to regulate offshore petroleum markets and there was insufficient information to monitor potentially manipulative activity adequately. As a result, government officials and the general public were unable to determine the degree to which the price spikes were caused by excessive speculation, market manipulation, or normal market reactions to supply and demand. Recent regulatory changes give regulators this power, an important aspect of a successful regulatory process.

2. Credit Default Swaps – The economic crisis caused by failures of credit default swaps highlight the importance of a system for settling counterparty risk. In the CDS market, the settlement practice was inadequate, and the regulator was not aware of the vulnerable positions taken by major market players. The experience has underlined the need for transparency and adequate risk management. There is widespread acknowledgment that the CDS market would have benefited from (a) more government oversight to ensure the underlying value and integrity of the financial instruments and (b) more information to allow market participants to evaluate the risk of the parties with whom they were contracting.

3. The Madoff Affair – The Ponzi scheme orchestrated by Bernie Madoff highlights a separate issue—the importance of a vigilant regulator with adequate oversight authority and resources. In the Madoff situation, as the recent SEC inspector general's report indicates, the data needed to unearth the scheme were readily available; the cops were simply not walking the beat.

The lessons learned from these recent experiences are really quite clear, and if they are applied to the carbon market, should avoid repeats of the prior failures. In fact, the mechanisms to address these concerns already exist, and are included in many of the broader market reform proposals currently under consideration, including increased oversight, mandatory clearing of standardized products, real-time pricing and volume transparency, and expanded agency jurisdiction to cover the full scope of activity in a marketplace. These reforms, if passed by Congress, may apply across U.S. financial markets, including a new carbon market.

Unique Aspects of the U.S. Carbon Market

Many will claim that the carbon market should be treated just like any other commodity market. But it would not be like any other market – it will be somewhat unique. There are three distinguishing aspects of the market.

First, unlike markets in physical commodities, the entire carbon market system is created by the government to achieve a societal goal. Demand for the product, and the product itself, is created by government action, and thus the government has a special duty to ensure that its market operates effectively. Confidence in the product is also essential; in this way, the government's role in providing an accurate and transparent registry of emissions and in creating the protocols to ensure that offsets are real and verified are essential to keeping confidence in the market.

Second, entities covered by the legislation will have no choice but to participate in the market, and it is a market with an ever-reducing supply. For example, if the American Clean Energy and Security Act became the law of the land, a pool of 5.5 billion allowances in 2016 would decline to 5.1 billion in 2020 and 3.5 billion in 2030. Unlike traditional commodity markets, options for increasing supply in the event of allowance shortages will be limited to the amount of credits allowed from offset projects that operate outside of the covered sectors.

Third, the carbon market is likely to be driven heavily by derivative instruments (i.e., futures and options), underscoring the need to design an appropriate regulatory structure from the outset. Legislation will likely result in the existence of two major markets: (1) a cash market that will trade allowances from the current year; and (2) a derivatives market, that will allow the parties to purchase futures, options, and other instruments aimed at creating future rights to allowances.

Because of the design of climate legislation, the derivatives market will likely dominate. In particular, climate legislation will likely create a long-term obligation for regulated entities and those entities will need access to financial instruments to hedge their exposure—a necessary element to securing investment for new, low emitting energy technologies. The American Clean Energy and Security Act, for example, would distribute 132 billion allowances from 2012 through 2050. Yet, less than 5 million allowances will be issued in the first year of the program. This small initial "float" of allowances will likely drive demand for derivatives that offer future protection against price changes. Looked at another way, we are asking emitters to take on 38 years of abatement with potentially as little as 1 year of allowances available to manage risk.

From that perspective, it is entirely appropriate that we are here today, as the Commodities Futures Trading Commission is the natural entity to regulate the derivatives market expected to arise under these circumstances. Effective regulation of these markets is critical to ensuring a stable market that provides covered entities with the financial products necessary to meet their compliance obligations in an efficient manner.

At bottom, we must develop this market *de novo.* Financial markets typically evolve over time as they grow, and regulatory changes often follow the development of new financial products or respond to failures in the market system. Because Congress would create a new carbon market via legislation, lawmakers have the opportunity to design a transparent, efficient market at the

outset that builds on the best practices for market regulation and lessons learned from recent market failures.

Four Principles for the Carbon Market

I would like to leave you with four principles for an effective carbon market based on the lessons of the past decade: (1) real-time transparency; (2) adequate risk management and settlement; (3) a vigilant and well-funded regulator; and (4) transparent data and strong quality controls on the allowances traded.

1. Real-Time Transparency

Electronic markets for stocks and bonds have demonstrated that real-time transparency has made markets more efficient. Electronic markets also facilitate real-time market oversight – making it better, faster, and cheaper. Real-time access to information about market activity is the cornerstone to managing risk, reducing market volatility, and empowering market participants and watchdog organizations to monitor the market for manipulation, excessive speculation, and other illegal activity. Accurate, real-time information about prices and trade volume allows market participants to make more accurate bids and offers. This, in turn, helps to ensure that allowance prices more accurately reflect the marginal cost of abating emissions.

Transparency also can help maintain public confidence in the fairness and stability of the market—an element that may be essential to the long-term success of the cap-and-trade program's ability to reduce emissions in a cost effective manner. Real-time market information allows the public to monitor the effectiveness of the regulator as well as the behavior of market participants. Market data collected from multiple sources could also help assure public investors that their assessments of price, market direction, and counter party risk are based on accurate data. In addition, disclosure requirements for publicly-held companies and financial institutions allow investors to verify the accuracy of financial reports.

In general, publicly-available information should include:

- The instruments that are trading;
- Prices;
- The volume of trading activity;
- Where trading is taking place
- The entities that are trading and the positions they hold; and
- The positions held by market participants.

To the extent that carbon instruments are traded on registered exchanges, the exchange member's activity will be "printed" on the exchange as the trade occurs. This would apply to allowances, futures, options, and possibly swaps. If OTC transactions take place in the carbon market, the legislation will need to ensure that the regulator, market participants, and the general public have sufficient data to oversee and evaluate trading activity.

Congress will need to balance the public's access to timely market information with the legitimate concern that covered entities may need to protect confidential business information. It is important to note that the default real-time transparency as to "who" is trading is limited to the registered exchange member. In some cases this may be an emitter, but in many cases it will be an intermediary. Emitters, just like large mutual funds in the equity markets, could report their positions at a later date so that their activity cannot be "front-run" by others. Emitter reporting could be monthly or even quarterly along with their financials.

In addition to the information made available to the general public, regulators should have access to the full range of market activity in real-time in order to prevent and punish market abuses, including fraud and manipulation. The more detailed information an oversight body receives concerning trade prices, volume, positions, and trends, the better its capacity to detect trading irregularities and inconsistencies. With each of these elements in place, regulators can respond quickly to unexplained spikes in market price or trade volume to abate excessive speculation and ensure that prices reflect supply and demand.

2. Adequate Risk Management and Settlement

Carbon market participants also need to know that allowances purchased on the spot, forward and futures markets, which are held to maturity, will be delivered. The collapse of the mortgage-backed securities and credit default swaps markets in the fall of 2008 highlights the importance of managing the levels of risk that market participants may undertake.

In regulated financial markets, counterparty risk is generally managed by "clearing" transactions. Clearing consists of the confirmation, settlement, and delivery of transactions. Clearing houses serve as a central counterparty in a transaction in order to protect opposing parties from a default by the other. Clearing houses also compute the adjusted value of open positions on futures contracts (how much is owed or collectible) based on changes in contract prices – and use this information to adjust margin to ensure integrity on the marketplace. In addition, the clearing organization may verify the transactions between parties to discover and resolve any discrepancies quickly.

In the carbon market, a capped entity cannot run the risk that a contract to purchase allowances will not be fulfilled. This is the element of a compliance market that differs from a financial market. One can imagine financial remedies for non-performance of a carbon allowance contract. However, the capped entity that has not had its purchase filled with a physical delivery cannot submit to the EPA a financial settlement—it must submit allowances. Monitoring of the spot, futures and forward markets to assure that market participants are able to make delivery on their contractual agreements will be an important part of the regulators role in the carbon markets.

As much trading should occur on exchanges, or at least be cleared centrally, as is feasible. The system that you are building for this market really has three goals: (1) price discovery, (2) transparency, and (3) risk management through clearing. An exchange requirement would achieve all three goals; a requirement to print and clear all trades, even those occurring over the counter, will achieve the latter two. And in fact, as long as some significant volume occurs

across the exchanges, there will be discovery of prices that can be used to inform the OTC transactions as well.

Many will contend that clearing of long-term structural contracts will be difficult, as such transactions are unique and not liquid, and that parties will be required to post the collateral, or margin, necessary to participate in the market. These are nontrivial issues, and pose a choice between mitigating systemic risk and creating the additional cost of posting margin for entities. It will be your role to evaluate the tradeoff between these priorities.

In the case that Congress provides any exceptions to cleared or exchange-traded transactions, transparency for the counterparties and the regulator is even more essential so that the counterparty risk can be effectively evaluated.[1] Such exceptions should only occur if regulators know the extent of the obligations of the various counterparties in the carbon allowance and allowance derivative markets so as to ensure that such OTC markets remain properly regulated.

3. Vigilant and Well-Funded Regulator

Access to market data should be coupled with sufficient resources to process and analyze the information, broad jurisdiction that allows the regulator to oversee any trading that involves allowance-based financial instruments, and appropriate enforcement to address market abuses when and where they may occur. If Congress will ask the CFTC to take on the oversight of this new market with the degree of detail that is suggested here or in the current proposal from Senators Feinstein and Snowe, then more resources will be required to build the team of regulators needed. Some would fund this through a fee applied to trades. I would suggest that another alternative exists in tapping the value from auctioned allowances. Either way, the legislation has the means to create the funds needed.

With respect to the regulator's vigilance, it is a challenge that this Committee can uniquely answer. Tight Congressional oversight will help ensure that the "cops remain on the beat." And some forethought might further benefit that oversight, as the Committee might ask for data about the market to be provided regularly so that it too can monitor the market.

4. Transparent data and strong quality controls

Finally, the government must ensure that the information regarding the allowances traded in the market is transparent, predictable and reliable. Information, in the end, is what enables you to turn emissions into a tradable item. It gives the market apples-to-apples confidence in the products, particularly since greenhouse gas emissions are not as tangible a commodity as oil or pork bellies.

[1] What exceptions should there be for non-standard instruments to be transacted OTC? One suggestion developed by Professor Vish Viswanathan at Fuqua School of Business and that will be published in his October paper is to use the post-trade reporting of non-standard instruments to determine when volume is sufficient to require the contract to be "printed and cleared" on an exchange. For example, if there was a large volume of swaps for, say, carbon versus Libor, then such contracts could be required to move to listed trading.

First, the government must regularly and predictably produce information about the nation's emissions to allow for the market to evaluate demand. A good example of an effective program in this regard is the U.S. Acid Rain cap-and –trade program administered by the EPA. That program focuses the majority of its enforcement efforts on the accurate tracking of emissions and allowances. EPA handles vast amounts of information; it processes information for compliance purposes and makes emission and allowance data accessible to facilitate an efficient allowance market which builds public credibility in the emissions trading program. The key is that the ARP relies on a common measurement metric through rigorous continuous emissions monitoring systems (CEMS) with quarterly reporting of hourly emissions.

An example of how the poor provision of government data temporarily undermined a market can be found in the European Union. In the E.U. Emissions Trading System, most emissions were not measured directly; they were determined by calculation based on fuel consumption, specified emission factors and the thermal efficiencies for combustion units and on output and other chemical and engineering estimates for process emissions. During the 3 year experimental phase in the EU ETS (2005-2007) a significant price decline occurred in April 2006 following the reporting of 2005 emissions data by several member states in amounts that were significantly less than expected.

The government also must provide the market with adequate assurances that the products traded in the carbon market are what they claim to be. With regard to the emissions allowances, this is simple and straightforward. The government will create, serialize and track the government-issued right to emit.

With regard to offset credits, however, the government's role is to provide adequate protocols and procedures to ensure the market that any carbon offset project is real and verified. In particular, for offsets markets to be successful and to contribute to emission mitigation goals, there must be confidence that offset reductions do in fact occur, that they can be properly quantified, that they are additional to what would have occurred without the project, and that any re-emission later (reversal) or induced uncontrolled emissions in other locations (leakage) are properly accounted. In doing so, the government must balance the need to provide quality assurance with the need to keep the costs of verification and monitoring low enough to attract investment in the projects.

Fortunately, I believe such a balance can be struck. In our work at the Nicholas Institute, we have engaged with producer groups, market participants, environmental advocates, and emitters to design policy that can provide environmentally valuable offsets at lower transaction costs. These efforts, first published in our report *Designing Offsets Policy for the U.S.,* continue as we strive to find the correct balance.

I also now serve on the board of the Climate Action Reserve, a national organization focused on providing regulatory-quality standardized protocols for the development, quantification and verification of greenhouse gas emissions reduction projects in North America; issuing carbon offset credits known as Climate Reserve Tonnes (CRT) generated from such projects; and tracking the transaction of credits over time in a transparent, publicly-accessible system. For the project types already approved by the Climate Action Reserve, I believe that the protocols have

struck this balance, for at least some project types, as evidenced by the strong investor interest in offsets projects using their program.

One final note – Accounting

While time does not permit a fulsome discussion of this issue, I would like to draw your attention to a short line in the U.S. Climate Action Partnership blueprint highlighting the need for "rational accounting" If a utility needs a futures contract as a bridge to a new low-carbon power plant – and their intention is to take delivery of the allowance at expiration to submit for compliance – should that utility have to mark the contract to market each quarter? Such a requirement should not be imposed lightly, since doing so would only encourage OTC hedging, or less risk management overall.

Conclusion

The market is very powerful tool, by which environmental objectives may be achieved at historically low costs. But the market also can fail, particularly if it does not have adequate provisions to ensure that transactions are fair and transparent. As I have testified, I believe the mechanisms exist to avoid such a failure.

Concerns about market abuses have nonetheless led some to conclude that now is not the time to create a new market. Let me posit that the exact opposite is true. If you choose to create a market, now is the best time to create a transparent, effective market that prevents excessive speculation and manipulation while allowing individual business leaders the flexibility to decide how to comply. The lessons from past market failures are fresh in our minds, and the public is attuned to the needs. If it wants to do so, Congress has all the tools it needs to create a well-functioning marketplace.

.

REFERENCES

Testimony of Jon A. Anda before the Subcommittee on Energy and the Environment, House Energy and Commerce Committee, April 24, 2009, *available at* http://energycommerce.house.gov/Press_111/20090424/testimony_anda.pdf

Justin Baker, et al., *The Effects of Low-Carbon Policies on Net Farm Income*, Nicholas Institute Paper NI WP 09-04 (2009)

Denny A. Ellerman and Paul L. Joskow, *"The European Union's Emissions Trading System in Perspective,* Pew Center on Global Climate Change (2008).

Richard F. Kosobud, Douglas L. Schreder, Holly M. Biggs, *Emissions trading: environmental policy's new approach* (2000).

Jonas Monast, Jon Anda, and Tim Profeta, *U.S. Carbon Market Design: Regulating Emission Allowances as Financial Instruments,* Nicholas Institute Paper CCPP 09-01 (2009)

Lydia Olander, *Designing Offsets Policy for the U.S.*, Nicholas Institute Paper NI R 08-01 (2008).

Testimony of Jon A. Anda before the Subcommittee on Energy and the Environment, House Energy and Commerce Committee, April 24, 2009, *available at* http://energycommerce.house.gov/Press_111/20090424/testimony_anda.pdf

Various Authors, *Mitigation Beyond The Cap: A Series of Briefs on Expanding Climate Mitigation Opportunities*, Nicholas Institute Policy Briefs, 08-01A, 08-01B, 08-01C, 09-03 (2008 and 2009)