



**Testimony of Lane Burt,
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**Hearing on:
Oversight of the GSA and Energy Efficiency in Public Buildings**

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Summary

The building sector is the largest source of global warming pollution in the United States, accounting for roughly one-third of greenhouse gas emissions. Fortunately, buildings also offer the quickest and most cost-effective opportunity to reduce global warming pollution while yielding direct economic benefits by saving consumers money and boosting U.S. industry. Efficiency retrofits of existing buildings can generate dramatic savings using technology that exists today. The federal government owns nearly 2 billion square feet of commercial space, representing billions of dollars in energy savings that could be generated for taxpayers from retrofits. To make these savings real, the U.S. General Services Administration (GSA) and all federal agencies should prioritize efficiency improvements with their renovation funds, especially those provided in the American Recovery and Reinvestment Act (ARRA). This investment would yield more than just direct taxpayer benefits, as the GSA is an ideal laboratory for cutting edge building improvements that could enable the private commercial building sector to make dramatic reductions in global warming pollution.

The continued existence of tremendous opportunities for energy savings in buildings reflects the significant barriers to pursuing building efficiency. Building owners and occupants have not taken advantage of efficiency opportunities, even when it is in their best interest to do so, despite the growing acknowledgement and demonstration of the potential benefits. This effect can be traced to the existence of market barriers that discourage energy efficiency, such as split incentives, lack of consumer awareness, and problematic treatment of energy efficiency by the financial sector.

Overcoming these barriers to efficiency will not be easy. It will take well-designed policies to induce a market transformation, where energy efficiency would be appropriately valued by all parties. This transformation will not occur without leadership from early adopters of advanced technologies and methods. The federal government needs to lead by example and play this role to the greatest extent possible.

In the American Recovery and Reinvestment Act (ARRA) of 2009, Congress provided the GSA with the opportunity to demonstrate leadership in its facilities by allocating \$4.5 billion dollars to the GSA for the “greening” of existing facilities. This tremendous investment of public dollars is a great opportunity for GSA to return at least twice as much in savings to taxpayers. Congress should work to ensure that the agency is successful in this endeavor. As the first step, GSA should reaffirm its commitment to prioritizing efficiency in every project that receives ARRA funding and communicate the savings of every retrofit to Congress and the public. Documenting the amount of energy and water saved in every building is the best way to oversee the progress of the agency, identify problems, and demonstrate success. The GSA should also create a strategy for attaining all the remaining cost effective energy efficiency in their facilities, share best practices with state and local governments and the private sector, and also share their most effective building energy management strategies within the agency to encourage further improvements.

There are also opportunities for GSA to lead on advanced energy efficiency by utilizing new tools and continuing to take advantage of existing programs. NRDC has developed, with the US Green Building Council (USGBC) and stakeholders from all aspects of commercial real estate, an energy efficiency lease that seeks to properly allocate the costs and benefits of efficiency improvements between owners, tenants, and brokers, thereby addressing the market barrier of split incentives. The GSA and other agencies should offer this lease structure to its building tenants while requesting this structure of building owners in spaces it leases.

GSA will not be able to take advantage of all the efficiency opportunities in its thousands of buildings with the funding in ARRA and should therefore consider other avenues for undertaking retrofits. The Energy Service Performance Contract (ESPC) is one such tool for improving efficiency without up-front funding. The federal tax deduction for energy efficient commercial buildings can also be utilized and will be available through 2013 with its extension in the Emergency Economic Stabilization Act of 2008. The provision contains an assignability option that would allow federal agencies to assign the deduction to the designer or engineer responsible for the improvements. The deduction should be used in all projects for the redesign of lighting systems, at minimum, to attain more efficient designs at lower cost.

Strong federal leadership is required to begin achieving the savings possible in buildings, and especially in commercial buildings. All efficiency measures that are cost-effective over an extended period should be pursued in federal buildings to reduce the operating costs of these facilities. The GSA, as the federal government's landlord, should lead the charge for all federal agencies on increasing energy efficiency. We welcome the Committee's leadership on building energy efficiency, which will help ensure federal funds are used well and reduce the total energy bill for federal buildings.

Introduction

Senator Boxer, Senator Inhofe and Members of the Committee, thank you for inviting me to testify on “Oversight of the GSA and Energy Efficiency in Public Buildings.” My name is Lane Burt and I am an Energy Policy Analyst with the Natural Resources Defense Council (NRDC). NRDC is a non-profit organization dedicated to the protection of our environment and the prosperity of future generations. NRDC has over 1.2 million members and online activists and employs over 350 lawyers, scientists, and other professionals. I am a mechanical engineer by training, a LEED accredited professional (Leadership in Energy and Environmental Design), and am NRDC’s principal advocate for federal policies promoting buildings and equipment efficiency.

To avoid the worst effects of global climate change, end our addiction to oil, and revitalize our economy, we must use energy more efficiently. Energy efficiency is the fastest, cleanest, and cheapest energy source we have and must be treated as such. The most cost-effective efficiency opportunities are in the building sector, which is the largest source of global warming pollution in the United States, accounting for roughly one-third of U.S. global warming pollution.¹ As the owner of an immense number of buildings, the federal government has a vital role to play in reducing emissions from the building sector. Reducing energy consumption in federal facilities will cut emissions and keep future taxpayers dollars from being unnecessarily wasted on energy. The GSA, as the federal government’s landlord, should lead the charge for all federal agencies on increasing energy efficiency.

Building Efficiency Opportunities

A 2007 study by McKinsey and Co., sponsored by NRDC and other business, industry, and utility organizations, found that most building energy efficiency measures using existing technology make money over time, reducing the cost of a cap on emissions. The study found that annual savings of \$33 billion per year are achievable from cumulative building sector efficiency improvements, with even greater savings resulting from more aggressive policies.² The chart in Figure 1 was developed from this study and shows the cost and scope of the policy options available to achieve the potential global warming pollution reductions it identified. The measures to the left have a negative cost over time, meaning they make money. Building efficiency (highlighted in red) is not only the most cost effective option, but also has the largest potential for reductions. Transportation and industrial efficiency follow buildings as net negative cost options.

¹ Energy Information Administration (2008). “Emissions of Greenhouse Gases in the US 2007 – Overview.” <<http://www.eia.doe.gov/oiaf/1605/ggrpt/>>

² McKinsey and Company (2007). “Reducing U.S. Greenhouse Gas Emissions: How Much at What Cost?” sponsored by DTE Energy, Environmental Defense, Honeywell, National Grid, NRDC, PG&E, and Shell and available for download at www.mckinsey.com/clientservice/ccsi/greenhousegas.asp

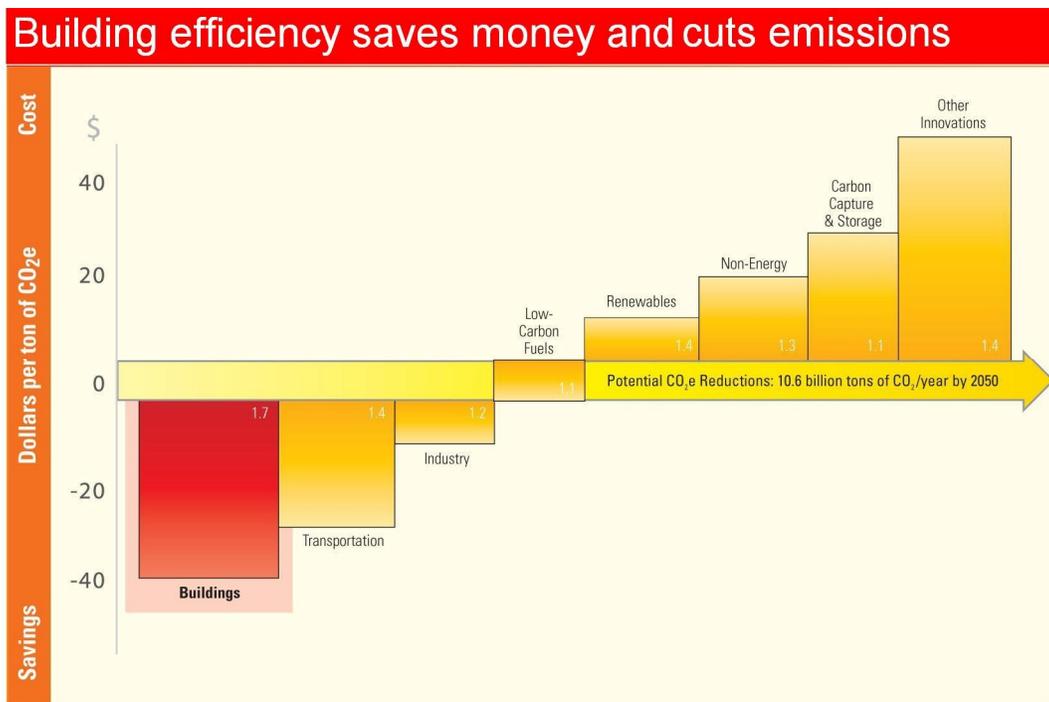


Figure 1: The cost of reducing greenhouse gas emissions

The vast majority of building energy efficiency opportunities can be realized through market uptake of efficient products and the retrofitting of the existing building stock. Based on this conclusion, NRDC advocates for policies that encourage building efficiency measures, including codes and standards for buildings and equipment, incentives for exceptionally efficient buildings and equipment, building energy labeling, and energy efficiency financing.

Barriers Prevent Efficiency Improvements

Energy efficiency opportunities for buildings are often ignored despite their undeniable benefits. This failure of the market can be traced to several effects, including:

- Split incentives - The individual who pays the energy bills is often not the individual who makes decisions about the efficiency of the building systems. For example, the landlord who does not pay the energy bills will not benefit from investing in more efficient equipment. Similarly, a home builder may only purchase the cheapest and least efficient equipment as the builder is not concerned with the home buyer's cost to operate that equipment.
- Lack of consumer knowledge about when and how to pursue efficiency – Many building owners have no idea how efficient their building is or how much energy it should be using. Even if they were to find out, they may not know what measures to take to reduce energy use, or how to make the improvements.
- Problematic treatment of energy efficiency by the financial sector – The cost to operate a facility is not taken into account in the loan underwriting process. This results in the false assumption that all buildings will cost the consumer or

occupant roughly the same amount to operate. This assumption may also discourage building owners from making improvements if they are not certain they will own the building for an extended period, as the final price may not reflect their investment. Further, loans that are granted based on future energy savings may be assessed as risky because the structure is new to lenders and the risk profile is not established, despite the nearly certain returns that efficiency improvements can provide.

These barriers are significant and ingrained. A robust set of policies and tools are necessary to overcome them and allow efficiency to be valued appropriately. Federal facilities have a unique role to play in this process, as they can become early adopters of advanced efficiency measures, thereby speeding market acceptance of efficiency measures while reducing energy costs to the federal government.

The Role of Federal Buildings

According to the Energy Information Administration (EIA), the federal government owns 46,000 buildings comprising almost 2 billion square feet of space - nearly 3 percent of all commercial space in the United States.³ Because of this significant market share, the federal government is exceptionally well-positioned to transform the commercial building market through its actions. Nearly 4 percent of offices and healthcare facilities are federally owned, while 13 percent of all service buildings are federal property. NRDC analysis of EIA's commercial building data indicates that with a 30 percent reduction in the energy consumption of federal facilities, annual savings of at least \$1.3 billion dollars are possible at today's energy prices. Global warming pollution could be reduced by over 7 million metric tons per year, equivalent to removing almost one and a half million cars from the road. These savings are direct only and do not account for additional savings that could be generated in the private sector as a result of lessons learned from federal leadership

The savings possible in federal facilities and all commercial facilities can be achieved in the near future because of the structure of the commercial building sector. Commercial buildings consume less total energy than residential buildings, but the sector has the potential for larger near-term reductions in energy consumption. The sheer number of residential buildings spread across the country will require a great expansion of the residential efficiency industry in order to achieve the potential cost-effective reductions in this sector, and this expansion will take time. Commercial buildings can provide larger energy savings per project and require less time and labor in total to retrofit. Federal facilities, which are almost three times as large as the average commercial building, are an even greater opportunity.

Even though the savings in commercial buildings may be achieved more quickly than residential buildings, they are often more technically challenging. This further enhances the value of federal facilities providing leadership to the rest of the buildings sector.

³ Commercial Building Energy Consumption Survey (CBECS) 2003

Federal buildings could be used to demonstrate advanced techniques, designs, and technologies. The stable nature of federal ownership also supports a longer-term approach for the evaluation of energy saving technologies – a luxury that the private sector does not have because it typically ignores paybacks of greater than 3 years. Congress has already provided agencies with the necessary authority to make longer term decisions by adjusting the life cycle considered for building improvements to 40 years from 25 in the Energy Independence and Security Act (EISA) of 2007. This is one of several recent changes that have led to improvements in the federal building stock and this progress should be built upon.

Progress in Federal Facilities

Many agencies have already begun to pursue efficiency opportunities in response to the Energy Independence and Security Act (EISA) of 2007 and Executive Order 13423. The Order requires an annual 3 percent reduction and a 30 percent reduction by 2015 of energy use per square foot in federal facilities compared to a 2003 baseline. Water consumption is also to be reduced 2 percent annually. EISA added a requirement for all new and renovated federal facilities to reduce energy consumption from fossil fuel sources 55 percent by 2010 and 100 percent by 2030. Many agencies have worked to meet these requirements and should be commended for doing so. GSA is one of these agencies, having exceeded the goal of reducing energy consumption 9 percent in 2008 with a reduction of 10.3 percent.

This progress in GSA and in all agencies must be continued. A report by the Government Accountability Office (GAO) in October of 2008 documented GSA's movement towards satisfying the requirements of EISA. Of particular importance in this report is the progress towards designation of energy managers in each of GSA's 8,600 buildings. GSA was attempting to complete designations by November 2008 and maintaining an energy manager in every facility should be a priority. Experience in the Environmental Protection Agency's Energy Star program has demonstrated that many buildings may attain low or no cost energy use reductions of up to 30 percent. These savings are not possible without educated and motivated individuals who understand and can respond to specific buildings. These managers will also be extremely valuable to the identification of future efficiency measures that may eventually receive federal funds from the Recovery bill or other sources.

Provisions in the American Recovery and Reinvestment Act

The American Recovery and Reinvestment Act (ARRA) enacted earlier this year provided GSA with \$4.5 billion dollars "to convert GSA facilities to High-Performance Green Buildings." This represents a tremendous investment of tax dollars and an equally large opportunity for a return on that investment if used properly. These funds could potentially leverage two or more times as much in avoided energy expenditures, and transparency is needed to ensure that this potential is achieved. Given the nature of the investment, oversight need not be expensive or an impediment to the GSA. The agency should document the reductions in energy and water consumption in each project so that

the success can be determined, prepare a plan for the attainment of all remaining cost effective energy efficiency in their buildings, and share best practices and lessons learned with state and local governments as well as the private sector.

Recommendations for Documenting Improvements

Prioritize Efficiency

The definition of High Performance Green Building in EISA is very broad and covers all aspects of a “green” building. No guidance on how to prioritize the different aspects is given, nor is any particular measure emphasized. It is therefore extremely important that GSA not only utilize the funds in a way that meets the definition but that it also prioritizes efficiency in all decisions regarding ARRA funding.

Improving energy efficiency is the first priority for “greening” an existing building. Energy efficiency measures pay for themselves quickly and reduce the need for future tax dollars. If pursued on a large scale, these measures can benefit the private sector through the increased market penetration and commoditization of more efficient products, technologies, and processes. Building-related emissions of greenhouse gasses are reduced as a result of efficiency retrofits and energy demand growth is controlled, thereby avoiding the need for new power generation and all the associated infrastructure costs.

Water efficiency must also be prioritized. A building is typically retrofitted or renovated once every 20 to 30 years, and the opportunity to reduce the water use of a building must be taken advantage of at this time. Water efficiency measures are not the primary goal of most retrofits, as water bills are very low; however, the societal value of water efficiency is extremely high. Significant amounts of energy are used to collect, distribute, and treat clean water and wastewater to acceptable standards. This energy consumption soars in the dry Southwest, reaching to 19 percent of all electricity consumed in California.⁴ Water is also becoming increasingly scarce in these parts of the country. The costs associated with water shortages and the economic consequences to all sectors (such as farming, power generation, or tourism) of these shortages must be avoided. Water is a precious resource that must be used efficiently and it is most cost effective to retrofit water systems during a comprehensive renovation or efficiency retrofit.

Document Performance

To demonstrate its progress in energy and water efficiency improvements, GSA should provide performance targets for every retrofit, in terms of energy and water savings. The agency should be evaluated based on the ambitiousness of these targets and their success in meeting them. These targets should be aggressive so poor investments of recovery funds would be discouraged. Each individual building will, of course, be different, so we also recommend that GSA reduce total energy consumption of the buildings being retrofit by at least 30 percent compared to the building’s previous state and water consumption by the same.

⁴ NRDC Water Facts. < <http://www.nrdc.org/water/files/energywater.pdf>>

GSA should document improvements in efficiency after the retrofit and publicly disclose this information in a report and on its website. Retrofits that squander the opportunity to reduce future energy costs will then be clear to all parties. There may be legitimate reasons for lower than expected performance, and GSA can explain should this occur. Similarly, exceptional performance will be rewarded with additional attention.

GSA is required by EISA to benchmark the energy use in its facilities using the Energy Star Portfolio Manager tool developed by the Environmental Protection Agency (EPA), and the agency should publicly disclose this data for each facility. The benchmarking tool utilizes energy bill data and building characteristics to make a comparison of the building to its peers. The building is given a score of the percentile of buildings in which it performs, and 75 or above is awarded the Energy Star designation. The disclosure recommendation applies to all federal agencies, as this action will encourage federal facility managers to operate their buildings efficiently and allow for easy identification of opportunities for improvement.

The benchmarking of retrofitted facilities will also be extremely useful for the facility managers of the individual projects. Good building managers become even more important after a retrofit, as the most sophisticated and efficient buildings will waste energy if not maintained and operated correctly. It is important that GSA understand the value of good energy managers and seek to identify those that excel in this capacity. Education and the sharing of best practices should occur across federal facilities to encourage the operation of facilities at peak performance levels.

Plan to Attain All Cost Effective Energy Efficiency and Share Best practices

In recent conversations with GSA leadership, the agency has shown an understanding of efficiency issues and the intent to take advantage of all opportunities. What is needed in the coming year is a systematic strategy to deploy all cost-effective energy efficiency measures in every building. This strategy should not be technology specific, rather it should focus on implementing baseline efficiency improvements to all the buildings that require it, the process for testing new technologies and communicating results across the agency, as well as the identification and sharing of building operations strategies developed by the agency's best managers. It is likely that GSA already has strategies in many of these areas but this information needs to be shared. The models would be extremely useful to state and local government in their public buildings as well as in the private sector. GSA should provide Congress, other agencies, and the public with a report outlining this efficiency deployment strategy for their existing facilities.

GSA should also develop a blueprint for pursuing efficiency opportunities in other areas where the agency is leading and will develop expertise, like performance contracting, facility management, integrated design, product procurement, and energy-efficient leasing. State and local governments benefit from leadership in all of these areas and GSA can help them avoid mistakes that are costly in dollars and CO2 emissions. The private sector would also benefit from the existence of best practices. This is an essential

element in scaling efficiency and capturing the large associated economic, climate, health and security benefits over the next decade.

Additional Tools

In addition to the disclosure of retrofit information and the sharing of best practices, there are other policies and newly developed tools that can be used by GSA and all federal agencies to make the investments in ARRA more effective. New and existing options, like the Energy Efficiency Lease, the Commercial Buildings Tax Deduction, and the Energy Service Performance Contract should be deployed when possible.

The Energy Efficiency Lease

NRDC has partnered with the USGBC and commercial building owners, tenants, brokers, and government officials to develop an Energy Efficiency (EE) Lease concept. The EE Lease is designed to address the market barrier of split incentives, where the party making decisions about the energy efficiency of the building systems will not benefit from investing in energy efficiency. In the commercial sector, this barrier takes the form of standard leasing practices that share operating and capital expense responsibilities between landlord and tenant, diminishing the attractiveness of the investment. This results in a failure to pursue efficiency, even in the face of rising energy prices and other pressures to improve the sustainability of buildings.

The EE Lease provides a set of guidelines that specifically document how to address common problems in the leasing of commercial space, including:

- Capital recovery that allows all savings generated by a retrofit to be used to pay for it.
- Benchmarking of energy use on a building-wide basis.
- Efficiency standards for equipment and systems replacements.
- Regular systems analyses and recalibration.
- Sub-metering wherever possible; and a greater sharing of energy consumption data between landlord and tenant.

Both landlord and tenant stand to benefit from these guidelines. The tenant is provided with an improved space, better and more reliable equipment, more information about their energy use and that of the entire building, and the possibility of decreased rent resulting from their own operational changes and that of their fellow tenants. The landlord similarly benefits from recovery of retrofit costs, greater information on tenant energy use, and tenants that are educated and aware of their energy use.

The potential for GSA and other federal agencies to speed the market penetration of the EE Lease is tremendous. The ownership statistics for federal and public buildings mentioned previously, when combined with the amount of space leased by government entities (GSA alone owns or leases more than 354 million square feet of space), represent a market share that would be impossible to ignore. GSA and other agencies should utilize these guidelines in leasing structures that they own and request the structure of

owners of buildings they are leasing. GSA could increase familiarity with the leasing concept through its interactions with the private sector and help reduce one of the most significant market barriers to energy efficiency in commercial buildings to the private sector. Large scale adoption of these principles could pave the way for the private sector to redistribute funds away from wasted energy to more productive uses.

The Federal Tax Deduction for Efficient Commercial Buildings

Another tool that may be useful to GSA is the federal tax deduction for energy efficient commercial buildings. The deduction was originally enacted in the Energy Policy Act of 2005 and extended in the Emergency Economic Stabilization Act of 2008 through 2013. This policy includes an option for a GSA or other federal agency to assign the deduction to a third party, usually the engineer, architect, or designer that achieves the performance targets of the credits.

The performance requirement of the deduction is a reduction in energy consumption to 50% below the ASHRAE 90.1-2001 model energy code with partial deductions available for qualifying improvements in building envelope, mechanical systems, or lighting systems. While some of these targets may be out of reach in the retrofit of an existing building, the lighting deduction is often attained in practice and should be targeted in GSA retrofits. There are also several proposals in Congress to increase the amount of the deduction, which would make it an even more valuable and usable option for federal agencies.

The Energy Service Performance Contract

A policy that has been utilized by GSA to finance a retrofit is the Energy Service Performance Contract (ESPC). These contracts involve little or no up-front cost to an agency because an Energy Services Company (ESCO) provides an energy audit of the facility, designs the retrofit, and guarantees a certain level of energy savings to the owner. The agency and ESCO then sign a contract, dividing the future savings between the parties so that the agency assumes no additional cost while the ESCO is paid for the retrofit. The retrofit is then performed and the agency retains all energy savings once the contract terms have been met. The Utility Energy Services Contract may also be an option, in which the utility plays the role of the ESCO. According to the Federal Energy Management Program, ESPCs have generated \$7.1 billion in savings across 19 agencies from an investment of \$2.3 billion dollars.⁵

The ESPC is an important tool for a federal agency or the party responsible for any large public building to increase efficiency without up-front costs; however they are not substitutes for general retrofit funds. Because of the tremendous number of federal buildings, this financing strategy is inadequate to reach all of the energy efficiency opportunities. Agencies that have the funds should continue to utilize them for retrofits, as the savings to the agency will be much greater than when the entire cost of the project is financed in an ESPC; however, when funding is not available, GSA and other agencies should continue to make use of ESPCs.

⁵ Federal Energy Management Program. "Super ESPCs – Just the Facts." 2008

Conclusion

The potential economic and environmental benefits of improving energy efficiency in public buildings are immense – at least \$1.3 billion dollars annually in energy savings for taxpayers are possible. The funding for GSA in ARRA can help begin to tap this potential, but only if it is effectively used to pursue energy and water efficiency. The most simple and effective way to achieve this goal is by GSA setting targets for energy and water efficiency in buildings retrofitted with ARRA funds and providing Congress and the public with the energy and water savings achieved from its retrofits. GSA should also develop a strategy for attaining all cost effective energy efficiency in every facility that they own and share this strategy openly with Congress, other agencies, state and local governments, and the private sector.

GSA should also utilize the other tools at their disposal to further their pursuit of efficiency. The newly developed Energy Efficiency Lease guidelines, the federal tax deduction for energy efficient commercial buildings, and the Energy Services Performance Contract are all useful tools to taking on this tremendous challenge and opportunity.

This concludes my testimony. Thank you for the opportunity to speak on these important issues. I would be happy to answer any questions you may have.