# U.S. EPA State and Local Climate & Energy Webcast:

# Beyond the Light Touch: Next Steps for Improving Energy Efficiency in Multi-Family Affordable Housing

## January 19, 2016

***Questions in bold were asked during the webcast.***

### Questions for All Speakers

1. Where I live in Detroit, MI; most of the housing is single family homes. Can parts of this program be adapted to a single family home?

   *Maryland DHCD:* DHCD uses a significant amount of the EmPOWER funds for single family weatherization. There are programs funded by DOE as well as programs in a number of states where utilities provide funding for single family weatherization. In our single family program, we contract with local agencies to do the audits, provide referrals of eligible homes, and they work with the owners or tenants and complete the work based on their audits. We have significant training requirements and guidelines. We also do a quality inspection review of at least 10% of the units. For multi-family, we provide support to building owners/developers to contract with energy auditors and contractors. We review the audits and the scopes of work, approve them, and inspect the work and provide the funding to the building owners to pay for the work. Because of the large investment in multifamily building and their complexities we work through the building owners and allow them to hire their own contractors as long as the audits and the work is consistent with our requirements.

   *Elevate Energy:* Elevate staff would be happy to discuss this question in more detail offline.

2. *On the split incentive:* I hope someone will talk about how to incentivize private owners or managers to create energy efficiency when tenants pay utility bills. In other words, why should private property owners invest in energy efficiency in their buildings when they don't pay the energy bills? In what way have you addressed this barrier?

   *Maryland DHCD:* When the tenants receive energy efficiency, it cuts the cost to the owner related to evictions and turnovers and improves the overall energy efficiency of the building since the owners still have responsibility for common areas.

   At Maryland DHCD, we worked closely with the developers and building owners through their professional association and by working to craft an approach that was sensitive to their control. In some cases, there was a need for the landlord to invest funds in additional work to allow the energy efficiency to proceed. This work, while necessary to allow the energy efficiency measures to be done, was not allowed by the rules of the funding. We were successful in convincing them that if they invested $100,000 or so from their reserves for replacement for

ancillary work, this allowed us to provide $200 - $300,000 (or more) of energy funds to help upgrade their units and systems. This can lead to reduced costs for capital improvements.

Through the downward adjustment of utility allowances as allowed under the Federal Low Income Housing Tax Credit Program, properties can improve their net operating income by increasing income from rents if documentation of lower utility costs can be established.

Finally, the ability to advertise that their units are energy efficient helps them in renting the units. That is why it is important that you invest in units that are required to continue to rent to low to moderate income tenants (60% of median income and below)

*Elevate Energy:* Elevate Energy published a report, *Preserving Affordable Multifamily Housing through Energy Efficiency*, in which we explore the non-energy benefits (NEB) of energy efficiency in affordable housing and demonstrate practical metrics that others can use to track the NEBs of retrofits.

In addition, a related case study helps put concepts in context, by evaluating the non-energy benefits of the Boulevard Apartments, three affordable multi-family buildings in Chicago, totaling 70 housing units. The buildings are owned by Bickerdike Redevelopment Corporation, a nonprofit community development corporation working for the redevelopment of communities on the northwest side of Chicago by and for low- and moderate-income residents.

Highlights from the Boulevard Apartments case study include the following:

- The buildings saw a 17 percent reduction in maintenance costs one year post-retrofit.
- Two-thirds of tenants felt that their unit stayed cooler in the summer and warmer in the winter.
- The buildings saw a 19 percent reduction in gas usage post-retrofit, which is the equivalent of $12,624 in savings, a 27 percent decrease in rental vacancy loss as a percent of potential receipts.

Measuring the non-energy benefits of energy efficiency improvements helps us all. Building owners, energy efficiency program providers, and utilities will better understand the different categories of multifamily non-energy benefits, including societal, utility, tenant, and owner benefits. By incorporating the metrics discussed in the report—such as operations and maintenance savings, decrease in rental vacancy loss as a percentage of potential receipts, likelihood to renew lease, and confidence in the ability to pay bills—we help strengthen the case for energy efficiency in affordable housing for building owners, program providers, utilities, and tenants.

3. Although the focus is on energy efficiency in design and retrofit, there are a number of opportunities for healthy homes issues that would increase the benefits and improvements to health. Is healthy homes a challenge or just not even considered in this type of energy efficiency project?

*Elevate Energy:* Healthy homes issues can be challenging, as utility funds and other grants are often restricted and cannot be used for energy efficiency and sometimes add cost to the project. That said, Elevate flags health and safety issues such as pest, indoor air quality, mold, combustion safety issues, and other similar issues. We work with the building owner to resolve issues as part of the retrofit package. Often, health and safety is tied to deferred maintenance, a common issue in cash-strapped buildings.

4. How can public housing buildings leverage money for cooling energy efficiency measures if cooling isn't included in (non-elderly) utility allowances?

   *Maryland DHCD:* The Maryland EmPOWER program doesn't take utility allowances into consideration. The Low-Income EmPOWER program is intended to assist low-income people in reducing their utility consumption. Energy conservation measures identified as being cost-effective qualify for funding regardless of any utility allowance. Additionally, utility allowances could typically be reduced where tenants' utility costs have been reduced because of the program.

   *Elevate Energy:* This seems like a case-specific question and we would be happy to talk it through offline. Please feel free to contact us at peter.ludwig@elevateenergy.org or angelina.benson-glanz@elevateenergy.org to discuss further.

5. Are there monies available for 202 Rehab Projects?

   *Maryland DHCD:* We are not familiar with funding opportunities outside of Maryland. In Maryland, we do incorporate EmPOWER funds into eligible 202 rehab projects whenever possible. 202 rehabs make up about 40% of the low-income EmPOWER funding.

   *Elevate Energy:* Elevate works with many elderly and supportive housing providers. The availability, level, and type of funds will vary from state to state, and from time to time. We encourage you to reach out directly to peter.ludwig@elevateenergy.org or angelina.benson-glanz@elevateenergy.org to discuss further.

### Questions for Victoria Ludwig and Leslie Cook (U.S. Environmental Protection Agency)

1. As mentioned several times, whole building energy use is very difficult to obtain. Without whole building energy information, what approach can a multifamily building owner take to benchmark a building and of what use is the information?

   *EPA:* EPA has developed several tools and resources that may be of use in benchmarking energy use in multifamily buildings, including:

   1) *Energy Efficiency in Affordable Housing* is an implementation guide developed mainly for local governments, but it contains a plethora of information on energy efficiency in multifamily buildings in general. It also includes references to several tools available from the ENERGY STAR program that can help with benchmarking.

2) The ENERGY STAR® Portfolio Manager® tool is a way to benchmark and track energy use. While whole building energy use information is preferred, there are still many benefits to using ENERGY STAR® Portfolio Manager® to benchmark and track multifamily building performance even when only part of a building's energy use data is available. There are two primary approaches to benchmarking a property with only partial building energy data. With either approach, benchmarking helps building owners quantify the benefits of efficiency upgrades, spot unexpected changes in energy use, and conveniently track performance over time.

   The first option is to enter only the energy consumption data to which you have access. Although the property will not receive an accurate ENERGY STAR score—the score calculations assume whole-building energy use—you can still use Portfolio Manager to track consumption, cost, and metrics such as weather-normalized energy use intensity (EUI) over time.

   The second option is to estimate your whole-building energy consumption using measured data from a sample of the individual units. As a general rule, the more you can measure, the more confidence you can have in the estimates. Note that any property that uses estimated data is not eligible for ENERGY STAR certification, but can still access all the other features of Portfolio Manager.

   These approaches are discussed in more detail in an FAQ on the ENERGY STAR website, "I Don't Have Whole Building Energy Data - What Can I Do Today?". You may also be interested in two other ENERGY STAR resources relevant to a multifamily building owner with only partial-building energy data:

   a. The ENERGY STAR Success Story of TIAA-CREF, one of the largest institutional real estate investors in the nation. This case study highlights what the company was able to accomplish through benchmarking controllable energy use in its multifamily housing portfolio.
   b. The ENERGY STAR FAQ, "I Don't Have Whole Building Energy Data - What's Being Done To Change This For The Future?"

2. Would you consider a workshop for small residential structures for 1-4 units which also need help?

   *EPA:* We don't hold workshops, but this webinar series and our future case studies could be of help. Often these types of structures are eligible for regular residential low-income energy efficiency benefits. The programs featured in the webinar held on November 19, 2015 provide services that more than likely apply to these kinds of homes. The case studies that we will release starting in March (posted at www.epa.gov/statelocalclimate) will include examples of successful residential low-income energy efficiency programs.

### Questions for Todd Nedwick (National Housing Trust)

1. **Can cities get financing for efficiency for multi-family housing?**

*Todd Nedwick:* Yes. I think that there are programs out there that allow cities to apply for funding to help them develop programs. I think that DOE, through some of their funding programs, are geared towards cities. So, I certainly think there are funding sources out there that can be used. I'm not an expert on what those are, but I would suggest maybe focusing on what DOE has to offer.

*EPA:* Our Local Climate and Energy Program has resources for local governments that could be of help, including:

1) General web page on energy efficiency

2) The Local Government Climate and Energy Strategy Series gives a straightforward overview of different clean energy and climate strategies that local governments can use to achieve economic, environmental, social, and human health benefits. See the series on energy efficiency.

2. While I understand the need to simplify eligibility and not dive too deep into affordability percentages in individual units, there is an issue of displacement if, going forward, deep affordability is not maintained. Many of the tenants' rights orgs I have conversed with will not support these programs unless they are tied to continued affordability requirements. Does the National Housing Trust recognize and address these issues?

   *Todd Nedwick:* Yes, the National Housing Trust is strongly supportive of ensuring that properties continue to remain affordable. Our work focuses on securing resources to make energy efficiency improvements in properties that will continue to have long-term affordability restrictions. Program administrators can address this challenge by targeting resources to properties that meet a minimum affordability requirement.

3. When you refer to "cost effective" savings do you mean cost effectiveness as defined by most states in regulating Utility efficiency programs, i.e. TRC test? In terms of securing whole building savings what measures do you commonly find that are different from Utility prescriptive programs i.e. HVAC, lighting and weatherization incentives.

   *Todd Nedwick:* Yes, I was referring to the traditional cost-effectiveness screening process used by utilities, such as the Total Resource Cost (TRC) test. In our report, *Potential for Energy Savings in Affordable Multifamily Housing*, we calculated the maximum achievable potential using three variations of the TRC:

   - Scenario 1) Benefits assessed were limited to reduced energy, water, and operation and maintenance costs;
   - Scenario 2) Benefits assessed included the impact of low non-energy benefits; and
   - Scenario 3) Benefits assessed included the impact of high non-energy benefits.

The majority of utility-funded programs focus on lighting measures. However, our *Potential for Energy Savings* report found that savings from lighting measures account for only 18% of projected electric savings, while heating and cooling end uses contribute a combined 49% of total electric savings. In terms of gas savings, space heating accounts for 77% of the gas savings, with an additional 21% from water heating measures.

### Questions for Crystal Bergemann (U.S. Department of Housing and Urban Development)

1. **Does HUD provide energy efficiency assistance to non-HUD sponsored buildings? And what are they?**

   *Crystal Bergemann:* Multifamily building owners can join the Better Buildings Challenge regardless of if they received HUD funding and can therefore receive many of the benefits of being in the Better Buildings Challenge partnership. That said, specific opportunities of technical assistance and waivers are limited to HUD-assisted properties.

2. Does the HUD umbrella include tribal housing?

   Yes. HUD's Office of Native American Programs (ONAP) administers housing and community development programs that benefit American Indian and Alaska Native tribal governments, tribal members, the Department of Hawaiian Home Lands, Native Hawaiians, and other Native American organizations.

3. Since the HUD Better Buildings program is currently voluntary and has volunteers with units amounting to only 10% of HUD assisted units, how does HUD plan to reach the other 90%? And in a reasonable time frame?

   HUD's latest five year strategic plan outlines our Energy and Healthy Homes strategy, and our Annual Performance Plan includes our specific energy efficiency and green building goals for the coming year.

   From 2014–2018, HUD aims to continue to focus on energy and health investments in the residential sector, both in HUD-assisted housing, as well as in market-rate housing, to support the goals of President Obama's Climate Action Plan to cut energy waste in half by 2030 and accelerate clean energy leadership. We will reduce barriers to financing energy efficiency as well as on-site renewable energy, help unlock innovative and traditional sources of capital, and raise the bar on codes and standards that promote energy efficiency and healthy housing. In FY16, HUD has a goal of "greening" over 82,000 units using a variety of strategies, policy levers, and incentives.

4. Is HUD allowing energy improvements to be financed with utility savings?

   Public Housing Authorities can take advance of the Energy Performance Contract program, which allows improvements to be financed with utility savings. Congress recently authorized a

Pay For Success pilot program which will allow up to 20,000 units of Multifamily housing to utilize a similar model, with energy retrofits being paid for from realized energy savings.

5. Is HUD allowing a split of the savings to accrue to the owners?

   See question #4 above.

6. HUD requires Energy Audits of PHA housing every 3 or 5 years. As an Energy Auditor, I've done 2 such audits in the past and currently have one pending. Each time the PHA directors have complained that implementing the audit recommendations are an unfunded mandate. What is being done to improve this situation?

   *EPA:* The speakers were unable to provide a response to this question at this time.

### Questions for Angelina Benson-Glanz and Peter Ludwig (Elevate Energy)

1. **What are the best technologies for making an impact in electrical efficiency today? (Most affordable, stable, accessible, etc).**

   *Peter Ludwig:* I guess there are a couple of ways of looking at that question. If you're looking at it from a whole building perspective—if it's a building that has electric heat and electric cooling—there might be some opportunities to both look at certain retrofit technologies, more efficient heat pumps, better controls, lighting controls, things like that, that would just have a direct impact on consumption. You can also try to address what the peak demand of the building is and whether you can lower that in order to put the customer in a better financial position with respect to their bills.

   So I don't know that I know of any one particular technology. Usually when we go into a property, we're looking at what the existing conditions are, what the opportunities are to make improvements, and then we're trying to filter those through cost, payback, what's practical. As our speakers from Maryland mentioned, a lot of times certain retrofits aren't practical because it involves a lot of additional construction work that the budget can't support. So that's been our approach.

   I'm not sure if I'm answering the question in the way that it was intended. I'd be happy to follow-up offline if that's helpful.

2. Clarification from participant on Question #1: I guess my question is this: With all of the info I keep hearing on new technologies…solar, wind, geothermal, solar roads, advanced building controls, increased efficiency building materials, etc…what things are worth my attention at this time, and what are not really "ready" yet? What are my best resources for getting into this question? (For example, I can't ask a solar vendor, of course they will say it's great…)

*Elevate Energy:* There are so many products out there that it's hard to know where to start. Our rule is always do your utility bill analysis first. Then, examine the building so that you have a full picture of what energy measures are available and the range of paybacks. This can give you so much insight into where you are using the most energy and where to spend your time and money. We have a process to vet new technologies based on whether they are appropriate for the buildings we are working in, are compatible for existing systems they may be tied into, are cost effective for our customers, and have a track record of success and durability in the market.

In general, solar PV and domestic hot water panels are well-established in the market as are many advanced boiler controls. Many products have also been through pilot tests with third parties to measure their energy savings—it's good to speak with a third party about how to interpret these.

We also work really closely with our Contractor partners. Some of the key questions to ask of manufacturers/distributers and contractors are around cost effectiveness, durability and warrantees on parts and labor, their experience with the products previously, is there another customer who has used this product and will they put you in touch with them so you can visit the site and ask questions? Will the Contractor be there to assist after the installation? So, long answer, but we are happy to discuss more. Please reach out to us at peter.ludwig@elevateenergy.org or angelina.benson-glanz@elevateenergy.org to discuss further.

3. Is Elevate Energy's program only/mostly intended for buildings that are looking for significant capital investments and renovations?

   *Elevate Energy:* No, Elevate works with building owners at any point during the life cycle of the project. The average retrofit cost is $2,500 per unit, so most projects are not actually big ticket items. Many times, air sealing, insulation, lighting upgrades, direct install, and some HVAC work can get us to average 30% yearly savings.

4. How do you cover your costs? Do you charge property owners? Do you work with buildings as small as 8 units? Do you or others have suggestions for very small multi-family property owners for accessing this type of help?

   *Elevate Energy:* It varies from market to market. We do some fee-for-service work and we also have some contracts and grants. We work with buildings as small as 8 units. If you have specific questions about a specific portfolio in a specific market, we would love to talk in more detail to see what we can do.

5. On a per-project basis, how much of the process or which steps does Elevate pay for? E.g. benchmarking, the energy audit, installation, equipment, QA/QC, training, etc.

   *Elevate Energy:* It varies from market to market. In some markets, we have contracts or grants that enable us to provide the energy use analysis and on-site assessment, construction oversight,

QA/QC at no cost to the owner. In other markets, our services are fee-for-service. Wherever Elevate can leverage funds to project cost barriers to the owner, we will. Since we are active in various states, we would welcome a follow up conversation to get at the question more precisely. Please reach out to us at peter.ludwig@elevateenergy.org or angelina.benson-glanz@elevateenergy.org to discuss further.

6. How do you find building owners who qualify for your program, and how do you explain that you are bidding out or hiring GCs versus bringing your own contractor or workers to the job?

   *Elevate Energy:* We work with local builder groups, housing finance authorities, contractors, and other building owners to identify qualifying customers. We have a list of approved contractors we can bring to the project, but we also work with the building owners if they have a contractor they really like and want to work with, assuming they can do the work properly.

7. Have changes in Indiana law on energy efficiency affected the effectiveness of your work in Indiana?

   *Elevate Energy:* We began our program in Indiana after the changes took effect. Primarily, the changes have scaled back the amount of incentives available to help owners fund the cost of the retrofit, but have not affected the cost-effectiveness or uptake.

8. Do you have any plans to branch out even further? We have 25 communities in Oregon, California, and Texas.

   *Elevate Energy:* We have plans to continue to expand our services and would welcome a conversation about how Elevate could be helpful and what your goals are in these markets. We would be happy to discuss this in more detail. Please reach out to us at peter.ludwig@elevateenergy.org or angelina.benson-glanz@elevateenergy.org to discuss further.

9. Do you collect utility data from projects that are only whole building or authorize tenant data as well?

   *Elevate Energy:* This varies depending on our access to data in each market we operate in. It also depends on what the customers want and the specifics of the retrofit project. Many utilities have whole building data aggregation tools and there are data scraping platforms like Wegowise available.

10. California has recently received impact evaluation findings that have shown that utility and local government forays into whole building multifamily retrofits are very costly and largely not cost-effective. How can these programs be scaled and still be a prudent use of ratepayer funds?

*Elevate Energy:* That is an excellent and complex question. Without having seen this evaluation report, I am not exactly sure how to answer that question. At first glance, there are some things that the program implementer has to do in order to streamline the retrofit process:

- Constant improvement to customer service
- High quality technical approach to ensure high customer service
- QAQC and training to ensure that retrofit projects are performing well
- Bring financing and contracting partners to the table in order to build a truly comprehensive service that is designed around what building owners need

These steps help us build long-term relationships that reduce our customer acquisition costs and ensure that we are constantly seeking new ways to streamline the cost of service delivery, and also the right measure mix to balance cost effectiveness needs with the customer's needs. Cost effectiveness and our Total Resource Cost test is a major concern for Elevate and we have been able to run cost-effective programs for years. We would be happy to discuss more in detail.

11. For the 25,000 units in Illinois, what was the total cost of the "high touch" level of service, separate from the cost of work? What was the total cost to achieve those savings? Where did those funds come from?

    *Elevate Energy:* There are a variety of funding sources including owner payments, utility contracts, state and federal grants, etc. We would be happy to have a follow up conversation with more context.

12. What standards does Elevate Energy use to guide their audits?

    *Elevate Energy:* Ashrae, BPI, and other program-specific standards as requested by the client or required by contract. We also ask our contractors to use the HVAC Saves criteria and calculate Manual J and Manual D for new installations and retrofits of HVAC systems.

### Questions for William Ariano, Jr. and Scott Falvey (Maryland Department of Housing and Community Development)

1. **You mentioned the owners weren't as interested in grants especially if they had done the financing themselves in the past. Why?**

   If you get a grant, it literally reduces the amount of tax benefit to the outside investors that have put money into the transaction. What we've done is structured them as what's called cash flow loans or 0% loans with deferred payments so it's a loan. It doesn't negate the benefit of the tax credits that have been sold for these properties because it supports a structure that's based on available income to the project owner, that the owner will repay these loans and therefore be a cost that doesn't negate the "basis" on which the tax credits are based. The tax credits are purchased by investors whose investment go to cover equity shortfalls in a project and allow the developer to have enough cash to build the development. The tax benefits last for ten years and

the projects must remain affordable for at least 15 years. The treatment of the funds for the retrofit are a matter of structuring it to not jeopardize the tax credit investment. And that's part of the experience and understanding that you need to have when you are working in affordable rental housing with tax credits.

2. What would you say was/were the catalysts that made the case for an energy efficiency program at DHCD?

   DHCD had been involved in the single family weatherization program funded by DOE for over 25 years. So we had an understanding of the types of measures, and potential benefits of energy efficiency retrofit prior to the ARRA funding. That helped to propel the existing program to a different level as far as staffing and organization expertise. Prior to ARRA we had also identified a significant increase in mortgage payment delinquencies in our single family portfolio and identified a 70% increase in utility costs as the major issue for destabilizing these households. It was not that difficult a leap to realize that that was also going on in multi-family affordable rental housing. When we approached our developers and explained the potential benefit of decreasing unit turnover and potentially cutting their energy costs, they quickly embraced what we were offering.

3. How did you ensure that the energy savings would translate to lower payments by renters who have a one rolled-in payment (rent and utilities)? Any written agreement from participating owners?

   The multi-family EmPOWER program doesn't require reduced rents in return for receiving energy efficiency funding. Projects are required to keep their rents at an affordable level in accordance with the HUD rent tables for a minimum of 5 years.

4. For your QAP, what level of audits are required? Is it ASHRAE Level?

   The QAP currently requires only a preliminary audit at application. It does not define what a preliminary audit is. Projects that are approved to receive funding are required to have a comprehensive audit performed by their viability commitment. Broadly speaking, a comprehensive energy audit will identify all feasible energy saving opportunities and the report will include data to substantiate the claims made in the report. It would be similar to a modified ASHRAE Level 3.

   A challenge that we currently face by not requiring a comprehensive audit at application is that projects come in with minimal energy efficiency upgrades and a minimal budget supporting them. The energy efficiency budget typically grows by viability because all opportunities were considered by this time. This then becomes a problem because not only has the necessary financing changed but so has the project's work scope.

We required only a preliminary audit up front as a means to reduce the cost for the developer up front for application in case an application is rejected and financing isn't provided. The developer would then be out this expense that he wouldn't recuperate. DHCD is considering alternative methods to simplify this process for the next QAP.

5. Has the new governor been friendly to this program in Maryland?

   The Governor has continued to support the program and added funds in his budget to cover additional work over the initial allocation of utility funds.

6. My major pushback is not program issues, they are behavioral. Tenants are accustomed to opening windows to reduce the temperature in the apartments, and expect 85+ degrees as indoor temperatures. Has anyone successfully dealt with this issue?

   Having energy efficient and comfortable units aids in reducing the situations described above. Additionally, tenant education is critical. DHCD's QAP requires the project management staff to provide continuing tenant education and reminders on how to conserve energy. That said, you can have the most efficient and seemingly comfortable unit, but put a person in there and all bets are off.

7. What is the CER (Cost Effectiveness Ratio) calculation? And why does the CER have to be greater than 10?

   DHCD no longer uses the CER calculation. This formula was a requirement under the MEEHA 1 program that utilized Federal funds. See page 28 of the power point available at http://www1.eere.energy.gov/wip/pdfs/evaluation_webinar_slides_june16_2010.pdf for an explanation of the metrics.

8. Can you share the Energy Audit Guide and auditor qualification form?

   The energy audit guide is currently under revision. Its current format reflects the flexibility originally provided in the earlier stages of the program. There were very few things that were required where most things were recommended or suggested. We found that in having this flexibility, there was an extreme variation in what was received for energy audits and it was difficult to validate or even feel comfortable that represented savings were reliable.

   We found that energy auditors want to know specifically what the program wants/requires so they can do what is necessary. Energy audit reviews and comments were used to start bringing auditors in alignment with program requirements. From there, the auditor qualification form has been the quick and easy vehicle used to update program requirements because the guide has not been revised.

## Notable Comments/Out-of-Scope Questions

- Almost all the discussion has been focused on top-down programs that start with a government agency, the utility, or the non-profit organization. No one has mentioned the behavioral sciences, advanced metering infrastructure (and detailed usage information), new communications tools (mobile phones), new pricing options, new bill payment options (like prepayment) or customer choice of the level and type of service (as in the Texas retail electric market). I am writing as the manager of DEFG's "Low Income Energy Issues Forum" which is open to anyone to join. (http://defgllc.com)

  *EPA:* This question/comment was deemed out of scope.

- Is the USA improving energy efficiency too slowly? The USGS reported that at today's prices only about 3% of the coal resources in Montana and Wyoming can be profitably mined. Arthur Berman and David Hughes presentations on YouTube provide details about potential shortages of oil and natural gas beginning within ten years. While estimating when fossil fuels will become scarce and much more expensive is an inexact science, it will happen someday. Why not prepare? Further details available on request. Please let me know your opinions on this matter.

  *EPA:* This question/comment was deemed out of scope.