# WATTS HOT Newsletter®

YOUR SOURCE FOR ENERGY, TECHNOLOGY, SUSTAINABILITY & RESILIENCY

APOLLO Engineering Solutions®

Fall 2017 | Special Edition


## WELCOME TO PITTSBURGH - NAHRO'S 2017 NATIONAL CONFERENCE AND EXHIBITION!


Yes, you guessed it; the Doctors of Energy are back! You've probably seen the white lab coats, the crowds and excitement wherever they appear. We are happy to be in Pittsburgh to connect with our clients and reach out to new and old friends alike!

Ken Loar, President of Ken Loar and Associates, Dick Santangelo, President and CEO of Apollo Engineering Solutions, Michael Nail, President and CEO of Enlightened Enterprises, Jack Morrone from Innovative Solutions Corporation and our partner, Bob Somers with 2rw (not present), AKA as the 'Doctors of Energy,' will be on hand throughout the Conference to answer your pressing energy questions and prescribe some practical, energy saving solutions to help your agency become healthier, more energy efficient, more sustainable and more energy resilient.

Whether you have questions about energy performance contracting, RAD, utility allowance studies by Zappling, Infinite R Phase Change Materials, hybrid renewable microgrid systems to enhance your PHA's energy resiliency or just catch up on the latest technologies the ***Doctors Are in the House***. With their hands on the pulse of the PHA Energy Industry, the Doctors of Energy are not just a group of pretty faces, the Doctors are men of substance (maybe a little too much substance although they are watching their sugar and carbs) and have years of experience and track records of success! Best of all, these energy experts are available for a free initial consultation.

The Doctors of Energy will be appearing at **Booth 101** in the Exhibit Hall of the NAHRO Conference and Exhibition with their world class energy engineering partner, 2rw Consulting Corporation, throughout the Conference. Don't miss this opportunity to get your "Energy Checkup," learn something new, have some fun and be entertained by the Doctors.

## UPCOMING EVENTS

- **2017 NAHRO National Conference and Exhibition**
  October 27-29, 2017
  Pittsburgh, PA

- **Greenbuild International Conference and Expo**
  November 8-10, 2017
  Boston, MA

- **National Housing Conference, Solutions for Affordable Housing**
  November 29, 2017
  Washington, DC

- **2018 PHADA Commissioner's Conference**
  January 7-10, 2018
  San Diego, CA

## INDUSTRY ICON LEO DAUWER JOINS ENLIGHTENED

Michael Nail, President and CEO of Enlightened Enterprises, Inc., announced through Watts Hot Newsletter that PHA Industry Icon, Leo Dauwer, has joined Enlightened as a Senior Consultant. In making the announcement Nail indicated that *"Leo is an esteemed friend of many years and colleague and brings years of unparalleled experience, knowledge and the highest in ethical standards to our firm. We are proud and honored to have him work with us. Leo will be working with us and our world class business partners to bring enlightened energy saving strategies and solutions to PHAs throughout New England and the Nation."*

For More Information: Contact Michael Nail at 301-639-3767, Enlightened1on1@gmail.com

# Are You Losing Needed Revenues in your LIHTC Portfolio?

## Accurate Utility Allowances Can Help

If you are a PHA that has Low Income Housing Tax Credit (LIHTC) properties in your inventory and you have invested in energy savings improvements, your utility allowances (UA) may be too high, depriving you of revenues. You should be recapturing your investments in efficiency and property upgrades through a utility allowance specific to your property instead of the standard building approach. The average property has the potential of earning new rent revenues on an average $35 per unit, per month when using an approved engineering approach that captures the distinctions of your buildings. Multiply $35/mo. by the number of units times 12 months, and the savings can mount up quickly, far exceeding the cost to employ an engineered methodology. **Here are some actual 2017 national project results:**

| Location | Public Housing Authority or HUD HUSM | Energy Consumption Model or Engineered UA | Average Additional Rent Revenue Per Month |
|---|---|---|---|
| Birmingham, AL | 1BR ($178), 2BR ($245), 3 BR ($336), 4BR ($424) | 1BR ($132), 2BR ($144), 3BR ($160), 4BR ($178) | $142 per unit, per month |
| Miami, FL | 2BR ($132), 3BR ($196) | 2BR ($90), 3BR ($102) | $68 per unit, per month |
| Brookfield, CT | 2BR ($92), 2BR ($92) | 2BR ($65), 2BR ($67) | $28 per unit, per month |
| Columbus, SC | 2BR ($186), 3BR ($219) | 2BR ($140), 3BR ($145) | $60 per unit, per month |
| Boston, MA | 1BR ($63), 2BR ($87), 3BR ($111) | 1 BR ($45), 2BR ($55), 3BR ($67) | $31 per unit, per month |
| Canton, MS | 2BR ($151), 3BR ($200), 4BR ($205) | 2BR ($95), 3BR ($123), 4BR ($161) | $59 per unit, per month |
| Albany, GA | 1BR ($48), 2BR ($57) | 1 BR ($30), 2BR ($34) | $21 per unit, per month |
| Elizabethtown, KY | 1BR ($149), 2BR ($180), 3BR ($210), 4BR ($257) | 1BR ($97), 2BR ($119), 3BR ($129), 4BR ($141) | $78 per unit, per month |
| Columbus, OH | 3BR ($209), 3BR ($292) | 3BR ($152), 3BR ($154) | $98 per unit, per month |
| Fort Worth, TX | 1BR ($148), 2BR ($216), 3BR ($305) | 1BR ($81), 2BR ($93), 3BR ($107) | $128 per unit, per month |

Capture this same new rent revenue to help fund your RAD project using the HUD Alternative Utility Allowance Waiver Request.

**Stop by our booth #101 to find out how to participate in this program and hear numerous project success stories over the past year.**

# Microgrid Solutions: Keeping the Lights on and Your Agency and Residents Safe

## What is a Microgrid System?

The microgrid typically is a software based system that monitors and controls the operations of a confined power system. It monitors load variations, output of generators and load flow using sensors. It shuts off or increases output of the power system with a load following capability to ensure system transient and steady state stability and is a miniaturized version of a utility's 'control system or load centre'.

A microgrid can also be thought of as a group of interconnected loads and distributed energy resources within clearly defined electrical boundaries that acts as a single controllable entity regarding the grid. A microgrid can connect and disconnect from the grid to enable it to operate in both grid-connected and "island-mode."

## What Can Be Used to Generate the Energy Used in an Microgrid System?

The confined power system referred to above could be a combined heat and power system, renewable energy source such as solar or other energy generating system. Often called Combined Heat and Power (cogeneration or CHP), a combined heat and power system provides both electric power and heat from a single fuel source. While most power plants in the U.S. create steam as a by-product then expelled as wasted heat, a CHP system captures the energy normally lost in power generation and uses it to provide heating and cooling to factories and businesses. CHP has been used in the United States for more than 100 years. CHP is typically used in buildings or industrial systems for supply of both power and steam. The steam is used for space heating or hot water.

Renewable systems like solar cells, also called photovoltaic (PV) cells, convert sunlight directly into electricity. PV gets its name from converting light (photons) to electricity (voltage), which is called the PV effect. The PV effect was discovered in 1954, when scientists at Bell Telephone discovered that silicon (an element in sand) created an electric charge when exposed to sunlight. Soon solar cells were being used to power space satellites and smaller items like calculators and watches.

Today, third-generation solar cells are being made from many new materials besides silicon, including solar inks using conventional printing press technologies, solar dyes, and conductive plastics. Some new solar cells use plastic lenses or mirrors to concentrate sunlight onto a small piece of high efficiency PV material. The PV material is more expensive, but because so little is needed, these systems are becoming cost effective for use by utilities and industry.

The price of solar technology has come down in recent years, so much so, that solar technology competes with traditional energy generation in over 20 states and expected to be competitive in over 40 states by 2020 under current legislation. Add to the equation that solar technology is renewable and green, more clients are considering renewable solar technology.

## What Are the Benefits That a PHA Should Consider from a Hybrid Renewable Power Generation Facility?

With recent events in Houston, Florida, and the Caribbean, organizations responsible for the health and well-being of residents, patients and critical services are looking for sustainability and resilient power systems. The global market for grid and renewable energy storage is expanding rapidly. Increasing volumes of renewable energy sources such as solar and even wind is driving the need for energy storage technology to level power load and reduce the strain on the grid. Ultracapacitors play a significant role in delivering peak power and extending the lifespan of batteries in energy storage systems. Ultracapacitors can also provide backup power for uninterrupted power systems (UPS), and other short-term bridging and peak-shavings power applications.

**The benefits to your PHA include:**

1. **Meet or beat existing power supply cost at No Cost to your PHA.** Enhanced energy efficiency; reduced energy consumption

2. **Resiliency** - Total reliable "island" microgrid service during electric or gas grid blackouts
   - Very High Reliability compared to utility power supply
   - Islandized Operation – Lesser "interconnectedness" with and dependence on a large utility power system reducing system failure rate
   - Microgrid Control System Architecture
   - Battery Storage
   - Mitigation against natural and man-made disasters

3. **Sustainability** - Lower, and less volatile, fuel costs
   - PV Solar Energy Generation – "Fuelless" power generation
   - Battery Storage
   - Conventional natural gas fired combustion turbine

4. **Energy Security** – Provides diversity in energy supply including: renewable energy (PV solar); storage battery; combustion turbine or reciprocating engine, critical load – on-site backup generation; standby utility supply

5. **Clean Power Generation** - Reduced greenhouse gas emissions using PV Solar System; Battery Storage; Natural Gas

6. **Electric Power Cost Saving and Protection against future electric power rate increases**
   - Long term savings to your PHA compared to projected costs of the grid
   - Will meet or beat the above costs with a more reliable, resilient and clean power generation source
   - An important component of your PHA's Long Term Strategic Plan to better position the Authority for the future
   - Depending upon project structure may share revenue with the LMGA from power sales in the electric power pool's wholesale markets
   - Option for a public private partnership and Profit sharing for 30-year term commensurate with the PPA
   - No interference with existing or planned energy savings programs, policies or initiatives

7. **Rate reduction incentive from HUD**; *HUD Notice – 2014-18 specifically addresses opportunities for on-site utility technologies.*
   - Utilizing renewable energy supports the social goals of national security, public health, and environmental protection by reducing reliance on fossil fuels. Further, it increasingly meets the critical financial and operational needs of residential building owners and consumers, including PHAs and public housing residents.

**Stop by Booth 101 or Contact Dick Santangelo (AES) 703-627-7161or Mike Nail (EEC) 301-639-3767 for more information.**

# 179D Energy Efficiency Rebate Savings Continue at PHAs


***Danita Childers, Senior Director of Revenue and Partnerships, (left), Michael Gurgone, Chief Investment Officer and Treasurer; and CEO Eugene Jones, Jr., display the savings from a tax incentive program that encouraged energy efficiency.***

The Chicago Housing Authority (CHA) realized nearly $100,000 in savings as part of the rehabilitation of public housing units through a Federal Energy Policy Act tax incentive that encourages the installation of energy efficient measures. The tax code provision, known as 179D, encourages building owners to incorporate energy efficiency measures in the design and construction of public and private buildings.

The CHA's Investment Division, working with tax consulting firm Efficiency Energy LLC, has pursued 179D benefits on rehabilitation projects throughout its portfolio. The tax provision allows the CHA to share tax savings in partnership with its designers and contractors for the value of the qualifying energy efficient systems.

Building owners that install these energy-efficient components are allowed a tax deduction of $.60 cents to $1.80 per square-foot for buildings placed in service through last year. This is made possible by Section 1331 of the Federal Energy Policy Act (EPACT) of 2005, which enacted Section 179D of the Internal Revenue Service Code, providing a deduction to energy-efficient commercial buildings. Eligible projects included interior lighting systems, HVAC, hot water systems and building envelope.

CHA identified multiple projects in which energy-efficient improvements had already been implemented, including boiler replacement, lighting, domestic hot water replacement and HVAC. CHA's contractor then obtained a third-party certifier to confirm the energy-efficient components had been installed and that they improved industry standards. Currently, CHA has one other similar rebate pending with the IRS and anticipates receiving the second savings soon. The generated revenue would then go to non-federal funds. CHA has negotiated $205k (total) in savings from two projects and helping sister government entities implement and manage 179D programs. CHA also facilitated nearly $1M to the Chicago Public Schools via contract rider.

In addition to CHA, the Boston Housing Authority has also secured $239k in savings from lighting retrofits completed 2013-2016.

**179 Update** - A 179D extension through 2019 and increase to $4.75/sf via the **Clean Energy for America Act** was recently introduced in the Senate and a permanent extension at the current $1.80/sf was recently introduced in the House of Representatives. A **recent study** posited the potential **extension and expansion of 179D could create 77,000 jobs**. *Watts Hot Newsletter®* will keep you apprised of further legislative efforts. Efficiency Energy, LLC remains available at your convenience to discuss current outstanding (as well as potential) allocations available to PHAs and multifamily owners. Don't leave hard earned money on the table. Retroactive opportunity remains to recover allocations from new construction and lighting/HVAC/envelope retrofits completed 2013-2016.

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# Pay Attention to the Roof Over Your Head – It Will Eventually Cost You Money

Commercial residential roofs require continuous maintenance and repairs. If you know what to look for, you can catch danger signs of roof failure early to prevent extensive damage from occurring. Lack of maintenance is at the heart of most roofing problems. There are many reasons not to neglect a roof, including financial and safety, but it's important to have routine inspections done. Ponding water, a deteriorated base flashing, or pitch pockets that haven't been filled are items that can be easily spotted and fixed.

Among the most damaging problems is water infiltration. Water infiltration can destroy the roof membrane and infiltrate to the interior of the building causing mold, and damaging property. Regular inspection of interior ceilings and the roof itself can prevent water from infiltrating or can help catch it early. If you notice mold inside your building there is a chance of water infiltration or improper ventilation techniques.

Unfortunately, there are millions of square feet of failed roofs sitting originally designed to protect the occupants of low income housing, which have long surpassed the end of their useful life. Finding the source of the water infiltration should be the priority – whether it is cracks in the membrane, standing water, or leaking A/C units they should be stopped to prevent further damage. Caught early, you can avoid major expenses and inconvenience to your residents.

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Imaging tools provide aerial roof scans, that can identify options and alternative approaches that can save millions in unnecessary replacements. As an example, in a recent USPS building assessment, the analyses revealed that while 60 roofs need replacement, many other should only require r-skinning or restoration to perform like a new roof. Avoiding or delaying those roof repairs and replacements will only drive up maintenance costs, approximately 35 percent of what public housing authorities spend for operations. The impact to other HUD multifamily housing programs is no less dramatic.

## What If You Could Turn This Problem Into An Opportunity?

That's what happened when Tarrytown and North Tarrytown Housing Authorities in New York State commissioned for the replacement of two long overdue roof replacements using a unique, high performing but low-cost roofing solution. In late 2015, an innovative roofing solution known as "Wind Vented" roofing combined with an equally innovative energy saving product called "Infinite-R™ Phase Change Material" to deliver a durability and sustainability to both buildings with 35% reduction in investment, and an increase in energy performance. Let's spend a minute to better understand Wind Vent Technology. Wind vented roof system instead uses strategically placed "vortex valves" that relieve the pressure difference between the top of the roof and the underside of the roof membrane.

The result is a "Vacuum" effect that draws the roof system down to the roof deck as wind picks up. *"So, the harder the wind blows, the greater the vacuum keeping the roof in place."* Phase change material complements the wind vent system. If you haven't heard about this technology yet, its versatility will impress you. Infinite-R™ Phase Change Materials reduce the energy it takes to heat and cool your buildings by naturally absorbing and releasing heat.

This is achieved by undergoing a change from solid to liquid that requires significant more energy per degree of rise. For instance, the ice inside a drink cooler is a phase change material that freezes and melts at 32°F/0°C. When

exposed to temperatures above 32°F, it melts and absorbs heat to maintain the same temperature until melted. It does the same to release heat at 32°F when exposed to say 25°F until it's frozen.


Infinite-R™ Phase Change Material is a building product designed to be placed within the envelope of a building. It's designed to freeze and melt at a specific design temperature such as 72°F or 78°F, so it works just like ice inside the cooler but at a temperature that helps the building assembly in the heat of summer or dead of winter, or both.

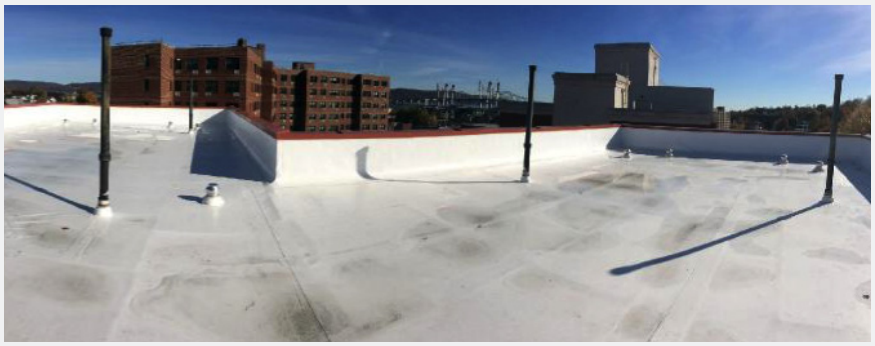
## Tarrytown & North Tarrytown Housing Authorities Case Study

Tarrytown and North Tarrytown, New York current building's roof systems were composed of coated modified bitumen over 11/2" perlite insulation over a structural concrete deck. The roof systems were in failed condition. Existing roof conditions included ponding water, failed field membrane and coating, and several areas where trapped moisture within the system was apparent and roof saturation had occurred.

The roofing system design in both locations was to do three main things; prevent costly labor by not having to demolish or tear off the existing roof system, restore existing roof system by installing ERC's Wind Vented Roof System, and install Insolcorp's Phase Change Insulation within the new system to save on energy. This made for a great partnership between ARS, ERC, and Insolcorp.

## Project Results

The project resulted in a 30-year roof that carries a 130 MPH wind warranty with increased energy performance. The beauty of the system from a contractor's stand point is the ease of install. Tarrytown and North Tarrytown projects were completed in 11-12 working days each. Alternative bids using conventional roofing solution suggested almost three times longer labor hours to complete the work.



## The Wind Vent/PCM Solution

The manufacturers behind Wind Vented Roofing (Environmental Roofing Components, Inc) and Infinite-R™ Phase Change Materials (Insolcorp, LLC) have combined their expertise to develop a unique roofing solution that provides maximum roof value without sacrificing energy performance. By loose laying the Infinite-R™ mats into a roof deck, the impact is an average 3 to 5 times R-value performance of the roof system. Roof-top solar in your future? The wind vent, Infinite R solution can be adapted to enhance your sustainable building design.

**Stop by Booth 101 for samples and more information. Check out the Hot Box laboratory.**

# Mission Possible: Control Facility Cost, Reduce Emergency Service Downtimes

It's Christmas Eve, your boilers in your senior hi-rise are down, your maintenance man is out with the flu and you can't reach your local plumber. We have all faced similar dilemmas. The question is how to set up a process that reduces emergency service downtimes while keeping costs reasonable. While a few firms are good at this, our partner in our booth this year, National Hot Water (NHW), a Dallas based company has a unique, comprehensive approach we believe can help PHAs.

NHW provides a one-stop shop for water heating, space heating, air conditioning, toilets, shower heads, parts and accessories. NHW made its mark by being the go to company for the nation's largest hotel and restaurant chains – that couldn't afford to have any significant down time for its customers. They have now shifted their focus to helping PHAs.

With their unique service model which combines 24-7 local service (NHW has over 500 plumbing contractors throughout the Country and 58 centrally located warehouses) with the buying power and support of a large national company, NHW can provide an important service to PHAs. NHW has also committed to bring the same discount for capital equipment requirements that larger PHAs and commercial entities enjoy to smaller PHAs.

For all the reasons above, the Watts Hot Newsletter is shining its light on NHW, a valuable resource for all PHAs. For more information on NHW, contact Michael Nail at enlightened1on1@gmail.com or 301-639-3767

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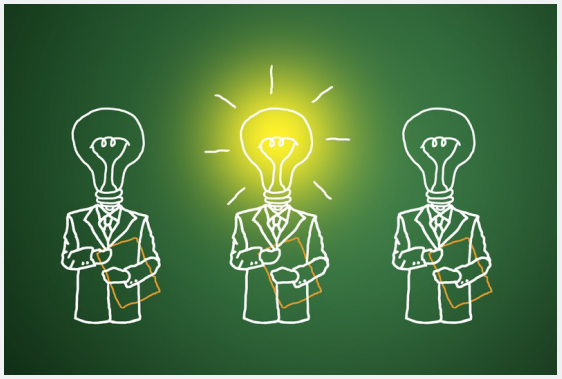
# Does Your Energy Consultant Have the Right Stuff?



Given the current fiscal constraints that PHAs and other multifamily properties are operating under, most don't have the luxury of having an energy manager on staff. And yet, since energy expenses constitute over 20 percent of a typical portfolio's operating expenses, it is important to secure the capabilities of an energy expert or energy company to help identify and implement strategic energy savings opportunities that reduce costs and better position the organization for the future. Now, more than ever with Washington budget discussions going in a downward spiral, investing in sustainability, conservation can make a difference in securing your bottom-line. Those opportunities can range from creating long term sustainable renewable options, procuring electricity and natural gas from more affordable sources, implementing passive energy solutions, to pursuing energy performance contracting and RAD. As you put together your procurement to purchase energy consulting services, here are seven tips to help you.

## 1. Be Specific, Yet Comprehensive

As you write your procurement documentation, be specific as possible as to your immediate energy consulting needs and the tasks you want performed. Include language that allows you to utilize your energy consultant's expertise on other energy related issues, as they unfold. For example, if you require energy expertise to help you navigate the energy performance contracting process, list the specific tasks that you want performed. Build in language that allows for the consultant to review and analyze and make recommendations on the annual measurement and verification (M&V) report provided by your energy services company (ESCO) or other entity during the term of the energy services agreement to ensure that your EPC is performing as projected.

## 2. Make sure that your Consultant is Knowledgeable About HUD Programs and Regulations

Selecting an energy consultant that is steeped in HUD programmatic and regulatory knowledge is crucial. The energy consultant should help you ensure that not only are you in compliance with HUD regulations but that you understand the interplay between various HUD programs and funding sources. For example, if you are contemplating whether to convert

your portfolio to RAD (HUD's Rental Assistance Demonstration Program), pursue an energy performance contract (EPC) or to redevelop your properties in another manner, make sure your energy consultant understands the big picture and knows the nuances between all of the programs and how best to evaluate what is in the best interests of your assets, your organization and your residents.

## 3. Choose a Consultant that is Knowledgeable About New Emerging Energy Savings Technologies

The energy field and related technologies is evolving rapidly. New generations of LED lights, breakthrough technologies like phase change materials that build in energy savings into building envelopes, and innovative locally distributed generation strategies like fuel cells, solar and wind are changing the ways we look at energy savings as well as sustainability, resiliency and disaster mitigation.

## 4. Choose a Consultant that is Knowledgeable About Financing Energy Infrastructure Improvements

As they say, it is all about the money. You may have the best energy savings strategy in the world but if you can not find a way to pay for it, it is useless. Your energy consultant should know about a range of ways that your energy improvements can be paid for using rebates, incentives, and other techniques to complement traditional debt based financing. And, the way we pay for energy enhancements is changing. New off-balance sheet approaches have surfaced that allows for energy improvements to be paid for without incurring debt. Your energy consultant should be able to help find the best fit to meet your needs.

## 5. Choose an Energy Consultant that is Knowledgeable About Our Industry

Having an energy consultant that understands and is committed to our industry is important. Having a consultant that is knowledgeable about industry best practices will help your organization in not having to re-invent the wheel as you look at energy savings options.

## 6. Choose an Energy Consultant with a Track Record of Success

Take the time to understand your prospective consultant and/or energy company. Do they have a track record of success in the areas that match up with your energy needs? Be sure to interview them and check their references! You are developing an often, long term relationship with your energy consultant and you should invest adequate time to make the right choice.

## 7. The Intangible – Choose an Energy Consultant that you can Work With!

Last, but not least, choose an energy consultant that is the right fit for your organization, one that you and your staff can work with. Finding the right energy consultant that is knowledgeable, competent, a good communicator, team-oriented and who is respectful to your staff from the administrative assistant to the CEO and your Board is extremely important. Finding an energy consultant with a good sense of humor helps as well.

***Michael Nail*** *is President and CEO and Co-Founder of Enlightened Enterprises, Inc. Mike was also the former deputy executive director of NAHRO. He is an industry leader/manager, strategic thinker, entrepreneur, community advocate and consensus builder, business-to-business leader, and energy expert. You can reach Mike at 301-639-3767 or enlightened1on1@gmail.com.*



# Contact Us

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