

Taking Energy Efficiency to the Big Leagues



MEEA – Chicago – Jan 13th, 2011
Chandler von Schrader, EPA



Agenda.... Can We Turn this Ship Around?



- Get Square with the Pyramid
- HPwES making noise
- Fixing Houses Right
- Where / What is HPwES?
- Defining the Home Improvement Industry
- The 2030 Home is here
- Barriers to Going Big
- Wrap up



The Savings Pyramid



- The Pyramid of CONSERVATION**
residential version
"A Foundation in Energy Efficiency"



Early (blind) Adopters - sexy

Singular event or with remodel job

HVAC replacement at failure, maintenance otherwise

DHW replaced at failure, Solar a distant option

Insulation as believed needed – much DIY

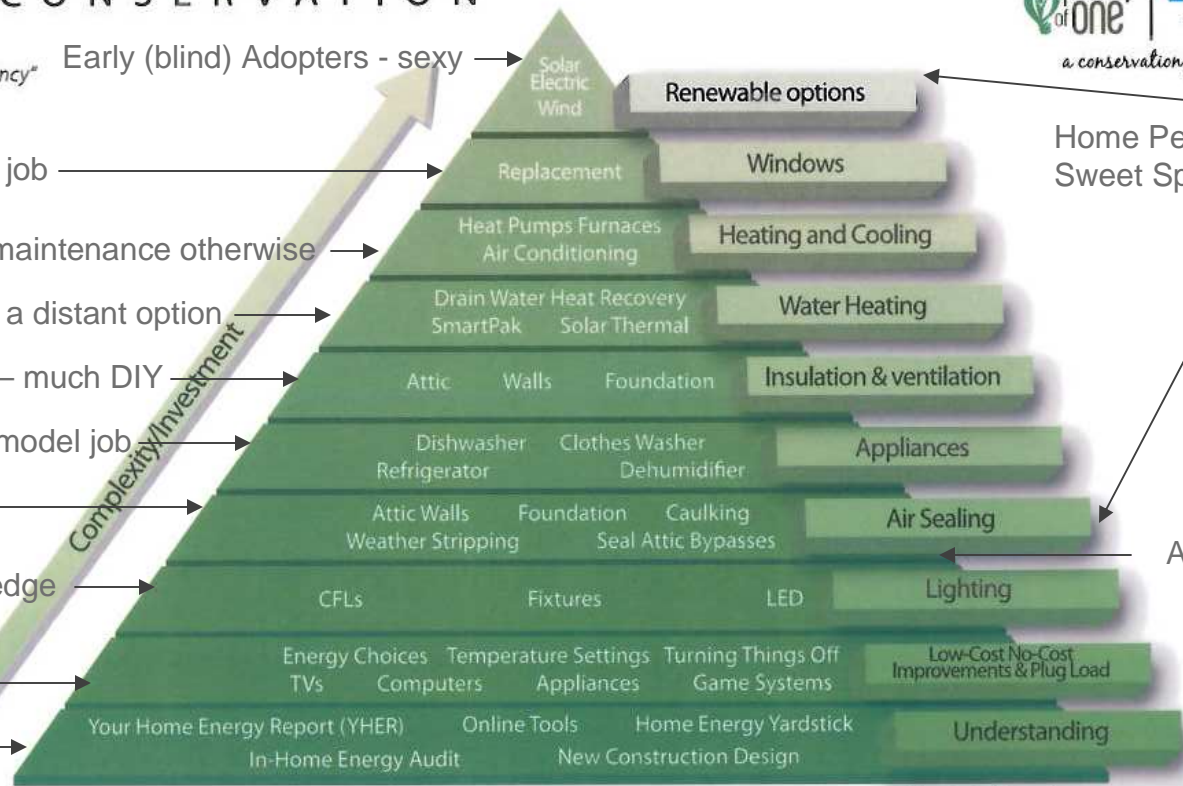
As appliances break or with remodel job

Largely a DIY Activity

ENERGY STAR Products / Pledge

ENERGY STAR Products

www.energystar.gov



Home Performance Sweet Spot

Audit Point

www.mnpower.com/powerofonehome

Conservation – where do I begin?

The choice to be more energy efficient may be clear, but the starting point can be more difficult to determine. The Pyramid of Conservation is designed to help you prioritize steps and develop an action plan that's right for you. By establishing a foundation in energy efficiency and gaining a better understanding about how you use energy, you can more effectively work your way up the pyramid.



Home Performance with ENERGY STAR



- Sponsored by a utility, state or local gov't
- A network of specialty trained contractors
 - Comprehensive audit with diagnostic tools
 - Recommend a package of improvements that typically save 20% total energy use
 - Ready to complete work – or provide contacts
 - Homeowner chooses and pays for work
 - Post work performance test, report to sponsor
- Sponsored delivered quality assurance and reports back to EPA

HPwES to the Rescue!



- Whole-house energy inspection
 - Energy specialist trained in building science
- Diagnose why performance is poor
 - Connect the comfort dots
- Summary report
 - Findings
 - Recommendations
 - Estimated costs and savings

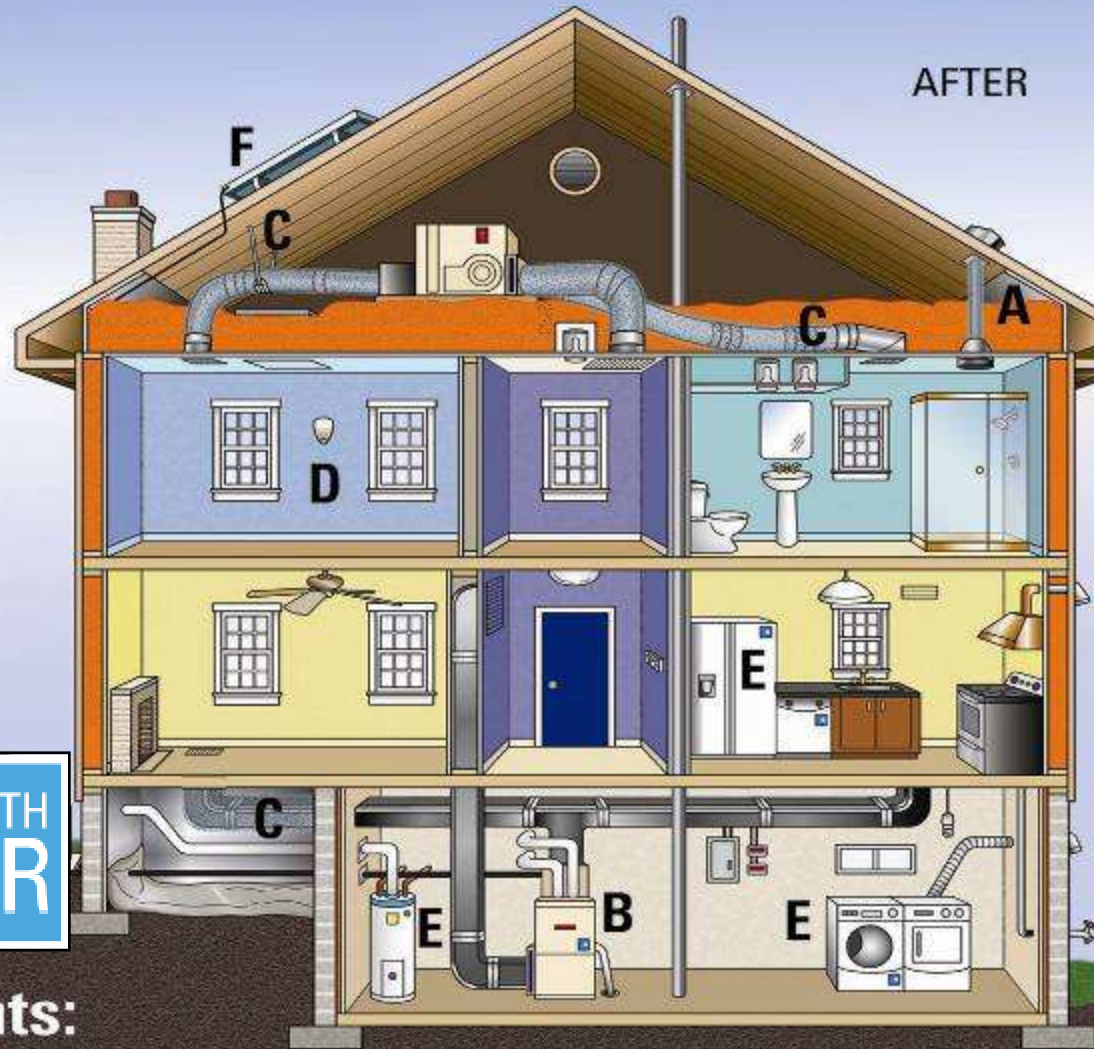
SELL THE JOB – NOT THE AUDIT
DO WORK – TEST OUT



BEFORE



AFTER



Typical Home Improvements:

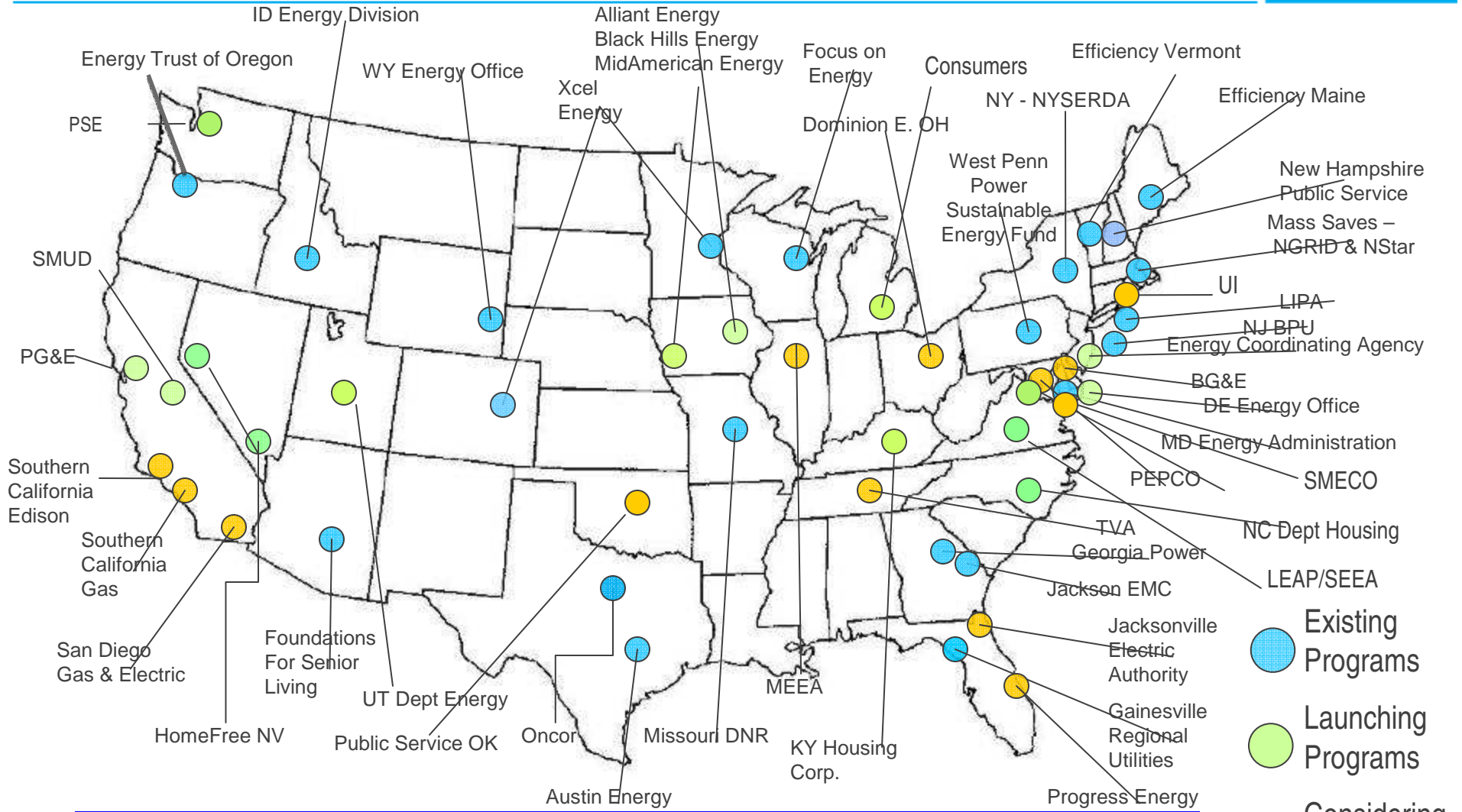
- A** Sealing Air Leaks and Adding Insulation
- B** Improving Heating and Cooling Systems
- C** Sealing Ductwork
- D** Replacing Windows
- E** Upgrading Lighting, Appliances, and Water Heating Equipment
- F** Installing Renewable Energy Systems

No HPwES without QA



- **Essential to contractor's long term success**
 - Energy savings are real
 - Credibility/reputation demonstrated
- **Requirements**
 - Contractor participation agreement
 - QA starts with reporting, no program w/o it
 - 100% job report review
 - 5% onsite inspection (1 in every 20 jobs)
 - Customer satisfaction survey
- Sell QA upfront !

HPwES 2010 - Becoming a Known Program



- Existing Programs
- Launching Programs
- Considering Programs



100,000+ homes improved!

One Sponsor's State Wide Impact



- 1364 jobs reported by MO DNR for 2009
- \$7000 average job
- \$9,500,000 invested improvements by MO homeowners by MO based firms
- At 20% savings – approximately \$400 yr per home served, total MO homeowners saved over \$500,000 – and these savings will continue
- Over 125 employed serving state's HPwES work
- HVAC replacement big part of activity

Home Performance – Good News / Bad News



- HPwES has become the most recognized market based efficiency program in US
- Since 2002 – over 100,000 homes served, with over 30,000 in 2010 by 35 plus programs with over 1300 contractors
- Delivering the Right service – improving homes' efficiency, comfort & durability –doing so safely, and under the ENERGY STAR QA umbrella
- Yet still a drop in the home improvement bucket – a bucket riddled with holes.....

Remodeling Activity – Hello!



| Event | Transactions Yr | Average Job | Revenue | Source |
|------------------------|-----------------|-------------|----------------|----------------------------|
| HVAC Replacement | 4.4 million | \$3,100 | \$13.6 Billion | Harvard Joint Study - 2009 |
| Window and Door | 4.6 Million | \$2800 | \$12.8 Billion | “ “ |
| Insulation | 1.6 Million | \$1500 | \$2.4 Billion | “ “ |
| Water Heater | 3.1 million | \$800 | \$2.4 Billion | “ “ |
| | | | | “ “ |
| Siding / roofing | 4.5 million | \$5200 | \$23.4 Billion | |
| HPwES (2010 projected) | 30,000 | \$8000 | \$240 Million | EPA |





70%

Percentage of 2030 housing stock that have already been built today

Windows, HVAC, roofing, DHW system and maybe a new kitchen or bath – all likely home improvements before 2030.... These are point of sales events that *will happen* – but is ENERGY EFFICIENCY playing a key role?

How much \$ will this homeowner spend on improvements through 2030????

| Home Improvement | Average Cost |
|----------------------|--------------|
| HVAC Replacement (3) | \$9300 |
| Windows and Doors | \$3100 |
| Insulation | \$1500 |
| DHW | \$800 |
| Roof /Siding | \$5200 |
| New Kitchen | \$15,000 |
| New Bath | \$8000 |

| Misc Home Improvement | Average Cost |
|----------------------------|-----------------|
| White Appliances (4) | \$4000 |
| Misc Painting | \$2000 |
| Misc Plumbing & Electrical | \$2000 |
| Computers / TVs | \$5000 |
| Landscaping | \$3000 |
| Driveway, fence, shed | \$8000 |
| ROUGH GRAND TOTAL | \$65,000 |

So Much Home Improvement Activity – Where is the Plan?



Heck – Just Add Insulation



That Insulator will Know how to Handle This...



Hope that Insulator is Good



Anyone Know a Good Roofer?



The HVAC Guy will Fix this – Right?



Did HVAC Contractor Look in Here?





Plumber says to replace
this tank

Yet did he realize
the problem could
be the dryer?

Remodeling Industry – HUGE and Fractured



- Hanley Woods via multiple trade magazines has best snapshot of industry
- Business largely defined by owning truck and a ladder
- Less than 5% of the \$200 plus Billion per year is done by the top 500 Remodelers!
- Hanley Woods divides industry into 3 large groups:
 - Insurance / Disaster
 - Replacement
 - Full Service

Insurance / Emergency Repair Work - Disasters Pay!



| Emergency/Disaster Repair Company | Location | 2009 Revenue | # Jobs (rough) | Avg. Job Cost (residential) |
|--|----------------------|------------------------|----------------|-----------------------------|
| Belfor Holdings | Birmingham Mich. | \$927,000,000 | 51,500 | \$18,000 |
| Aspen Contracting | Lee's Summit, Mo. | 80,000,000 | 8889 | 9,000 |
| American Technologies | Orange, Calif. | 48,568,381 | 4956 | 9,800 |
| City Wide Roofing | Denver | 29,000,000 | 3632 | 7,985 |
| Giertsen Co. | Golden Valley, Minn. | 26,200,000 | 1424 | 18,393 |
| TOP 25 INSURANCE REPAIR COMPANIES | | \$1,291,044,947 | 87,501 | \$14,754.61 |





Windows, Siding, Roofing – Oh My!

| Replacement Remodelor Activity | | | | | | |
|--|-----------------------------------|------------------------|------------------------|----------------|-------------------|---------------------------|
| | Company Name | Location | 2009 Revenue | No. of Jobs | Avg. Job Size | 2010 Revenue ^P |
| 1 | Window World | North Wilkesboro, N.C. | \$373,803,979 | 147,648 | \$2,500 | \$446,966,005 |
| 2 | Champion Window Mfg. & Supply Co. | Cincinnati | 277,186,474 | 43,300 | 6,402 | — |
| 3 | U.S. Home Systems | Lewisville, Texas | 110,951,000 | 14,644 | 7,500 | — |
| 4 | Power Windows and Siding | Brookhaven, Pa. | 79,517,505 | 9,374 | 8,500 | 130,000,000 |
| 5 | Penguin Windows | Mukilteo, Wash. | 56,299,198 | 4,323 | 13,078 | 52,000,000 |
| 6 | Castle Windows | Mount Laurel, N.J. | \$54,136,864 | 9,211 | \$5,875 | \$55,000,000 |
| 7 | LeafGuard by Beldon | San Antonio | 51,009,755 | 12,315 | 4,142 | 65,000,000 |
| 8 | True Home Value | Louisville, Ky. | 50,518,000 | 10,500 | 3,650 | 52,500,000 |
| 9 | Dixie HomeCrafters | Norcross, Ga. | 48,000,000 | 5,400 | 8,889 | 52,000,000 |
| 10 | 1-800-Hansons | Troy, Mich. | 43,194,007 | 8,437 | 5,120 | 45,000,000 |
| Top 175 Replacement Contractors | | | \$2,419,107,652 | 446,411 | \$5,419.01 | \$2,342,428,999 |



Full Service Remodeling - Could be Fuller



| | Company Name | Location | 2009 Revenue | No. of Jbs | Avg. Job Size | 2010 Revenue ^P |
|----|---|-------------------|--------------|------------|---------------|---------------------------|
| 1 | Aspire Design | Phoenix | \$30,675,430 | 2,241 | \$13,688 | \$48,000,000 |
| 2 | Case Design/Remodeling | Bethesda, Md. | 25,468,245 | 3,550 | 7,174 | 24,000,000 |
| 3 | Gardner/Fox Associates | Bryn Mawr, Pa. | 19,285,836 | 293 | 65,822 | 15,000,000 |
| 4 | BOWA Builders | McLean, Va. | 18,624,429 | 26 | 716,324 | 22,367,000 |
| 5 | Neil Kelly Co. | Portland, Ore. | 15,923,711 | 1,083 | 14,703 | 19,360,000 |
| 6 | Greater Dayton Building & Remodeling | Beavercreek, Ohio | 13,907,471 | 561 | 24,791 | 13,500,000 |
| 7 | Total Remodeling | Union, N.J. | 13,283,646 | 836 | 15,890 | 15,000,000 |
| 8 | Marrokal Design & Remodeling | San Diego | 13,061,134 | 80 | 163,264 | 14,500,000 |
| 9 | Dewson Construction Co. | Wilmington, Del. | 12,520,627 | 50 | 250,412 | 12,000,000 |
| 10 | Normandy Builders | Hinsdale, Ill. | 11,925,235 | 114 | 104,607 | 16,000,000 |

| | | | | | |
|--|--|----------------------|---------------|-----------------|------------------------|
| Top 300 Full Service Remodelers | | \$959,225,786 | 36,874 | \$26,014 | \$1,015,897,029 |
|--|--|----------------------|---------------|-----------------|------------------------|



Home Improvement verse Home Performance – the Barriers



- Programs are too complicated – utilities, retailers, manufacturers, cities, states and federal all with own nuances....
 - Training/certifications needs, confusing incentive structures, on again / off again program swings, lack of universal work standards, wild world of energy audits, BPI or RESNET, financing follies, quality assurance rigors, reporting challenges.... And then you toss in marketing/selling to homeowners!
 - Just too much for most remodelers – Is it worth it?

Retrofit to Recovery – 3 Keys



- Education : DOE's Home Energy Score – a 1-10 miles per gallon score on a house
- Demand: HUD's – PowerSaver Loan via FHA federally insured loans from private banks
- Workforce: DOE's Uniform set of national guidelines that identify skills and necessary knowledge

Benefits of Trained Workforce



In Conclusion



- Our nation's houses need improvement – and there is a ROBUST home improvement industry delivery in place already
- Yet traditional contracting misses the Home Performance Energy and Comfort mark – that can be corrected
- Traditional home improvement services is HP main competition – and it should be integral to most home improvement services
- Home performance delivery will be widely adopted if we understand business barriers and get Educate/Market cleanly
- Remember – the Contractor is King – they are “where the mastic meets the sheet metal” – build demand and they will come
- RTR efforts should help build capacity – and hopefully reduce confusion
- Programs need to continue to market – and seek to simplify where possible – demand building will solve many problems....

Bravery Needed to Grow this Industry!



vonschrader.chandler@epa.gov