

# Energy Management for Business

Measure. Improve. Save. Repeat.



# Welcome!

- THANK YOU Sustainable Tulsa
- About Me
- About THG Energy Solutions
  - Utility Bill Auditing/Data Management
  - Benchmarking
  - ENERGY STAR Certification for Buildings and Manufacturing Plants
- The Technological Revolution is Now
- Case Study
- Trends Shaping the Sustainability Profession

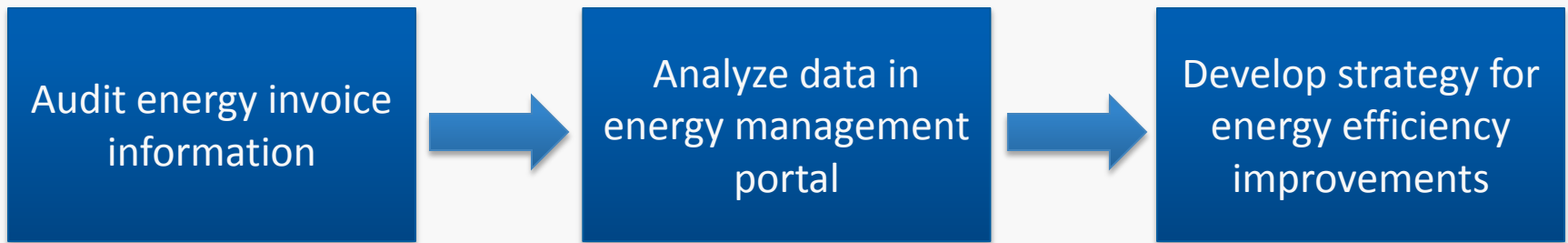
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# What Does THG Energy Do?

- The short answer:

THG saves companies money, energy, and time by helping them manage utility costs.

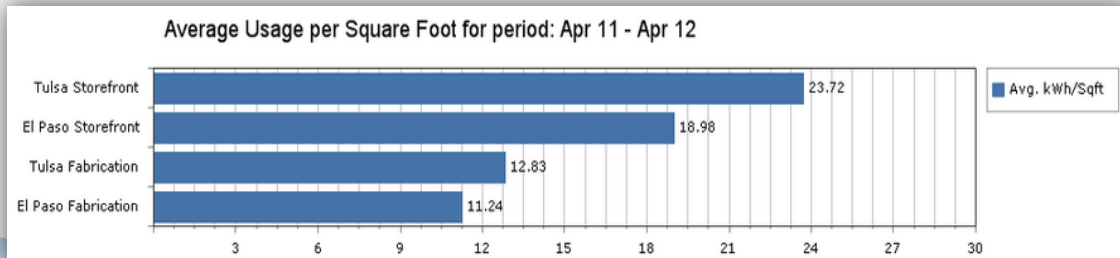
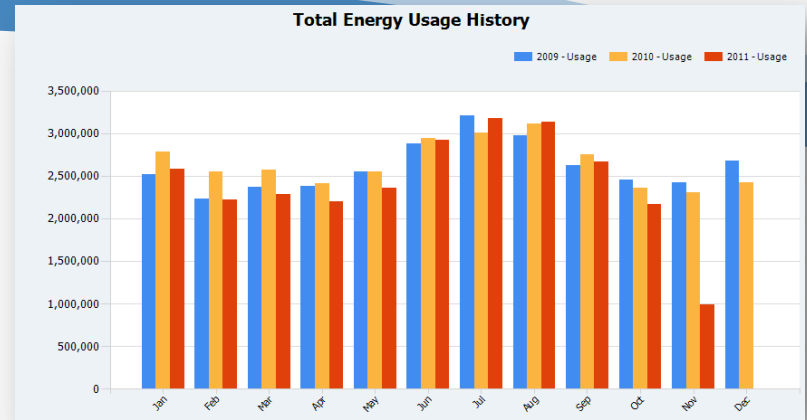
# Bill Auditing & Data Management



“You can’t manage what you don’t measure.”

# Benchmarking

- View usage and cost patterns
- Establish baselines to measure effectiveness of efficiency programs
- Benchmark similar facilities and operations
  - By store, city, state, region, school district, campus, fire station, etc.



# Benchmarking Drivers

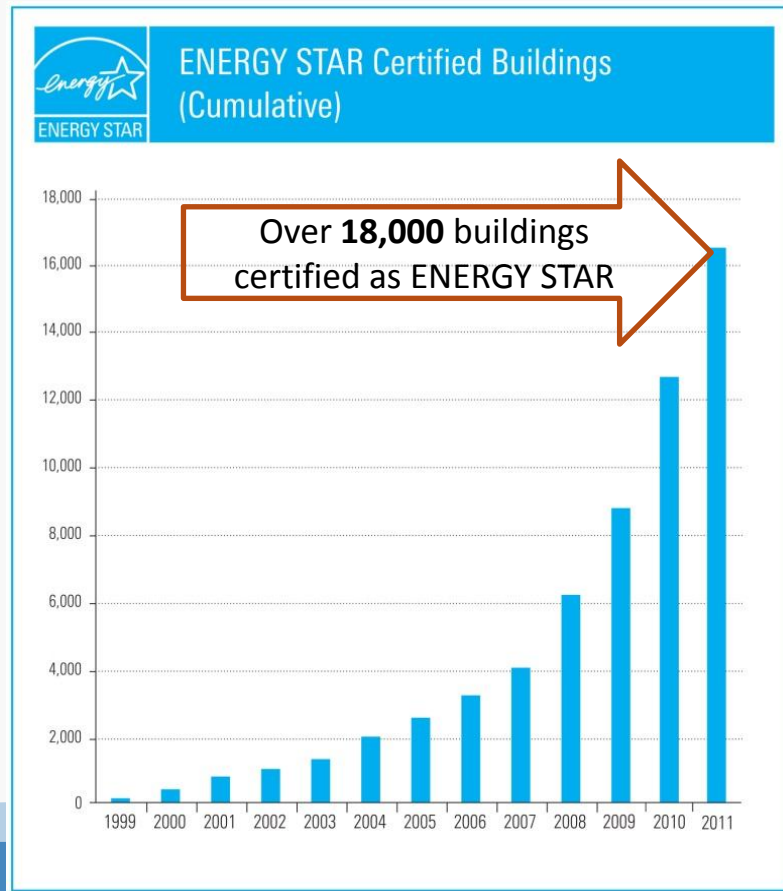
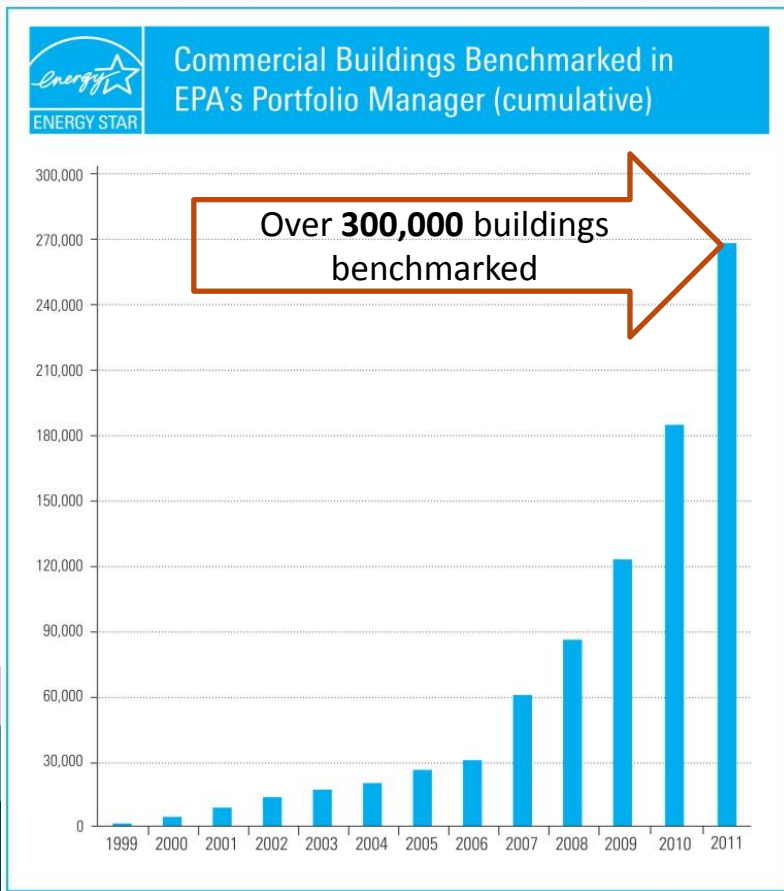
- Rising energy costs
- Customers in supply chain are demanding it
- Utility programs and incentives
- Federal government leasing requirements
- Energy Disclosure Legislation
- Corporate citizenship and recognition
- Green buildings and GHG mitigation



# ENERGY STAR for Buildings

- EPA voluntary climate protection partnership with energy users and service and product providers; established 1999
- Helps organizations measure, track, and improve energy performance; THG is a national Service & Product Provider
- Helps organizations save energy, money and protect the environment
- Increases occupancy/tenant retention due to improved comfort and air quality
- Promotes continuous improvement

# ENERGY STAR Goes Supernova!





# ENERGY STAR Benchmarking

Is 60 MPG high or low for this automobile?



Fuel Efficiency:  
**MPG**

Is 90 kBtu/SF/YR high or low for this building?



STATEMENT OF ENERGY PERFORMANCE			
Margrave High School			
Building# 012122		Date SEP 2008	
File Growth Period Ending January 31, 2004*		March 31, 2014	
Margrave High School		Owner	
12055 Pine St		Culpeper Group	
Langhorne PA 19033		12055 Pine St	
Langhorne PA 19033		Langhorne PA 19033	
Class Building Area: 341,228 SF		State: PA	
Year Built: 2002		Address: VA 22089	
		(551) 347-4900	
Facility Specific Data Summary			
Space Type	Area(SF)	Number of Students	Number of FCA
Classrooms	128	846	846
K-12 Schools	341,228	1,021	420
Site Energy Use Summary			
Electricity (kBtu)	Gas (kBtu)	Water (Gal)	Professional Verification
6,688,801	302,492	101,100	Yes
0	0	0	None
6,688,801	302,492	101,100	None
Results			
Energy Performance Rating (1-100)	94		
Energy Intensity*	97		
Site (kBtu/SF)	48.4		
Source (kBtu/SF)			
Electricity	6.95		
Gas (1000 kBtu)	265		
Water (1000 Gal)	21		
Energy Cost			
Cost (\$/SF)	\$04.66		
Intensity (\$/SF)	\$0.72		
Indoor Environment Criteria*			
Water or radon tested?	Yes		
Absence of mold/moisture?	Yes		
Radon tested and safe?	Yes		
Absence of asbestos present?	Yes		
Notes:			
* Margrave is ENERGY STAR certified building with a score of 94 based on the 2002 Energy Star. Based on 2002/07/07/08/10/11/12/13/14/15/16/17/18/19/20/21/22/23/24/25/26/27/28/29/30/31/32/33/34/35/36/37/38/39/40/41/42/43/44/45/46/47/48/49/50/51/52/53/54/55/56/57/58/59/60/61/62/63/64/65/66/67/68/69/70/71/72/73/74/75/76/77/78/79/80/81/82/83/84/85/86/87/88/89/90/91/92/93/94/95/96/97/98/99/100/101/102/103/104/105/106/107/108/109/110/111/112/113/114/115/116/117/118/119/120/121/122/123/124/125/126/127/128/129/130/131/132/133/134/135/136/137/138/139/140/141/142/143/144/145/146/147/148/149/150/151/152/153/154/155/156/157/158/159/160/161/162/163/164/165/166/167/168/169/170/171/172/173/174/175/176/177/178/179/180/181/182/183/184/185/186/187/188/189/190/191/192/193/194/195/196/197/198/199/200/201/202/203/204/205/206/207/208/209/210/211/212/213/214/215/216/217/218/219/220/221/222/223/224/225/226/227/228/229/230/231/232/233/234/235/236/237/238/239/240/241/242/243/244/245/246/247/248/249/250/251/252/253/254/255/256/257/258/259/260/261/262/263/264/265/266/267/268/269/270/271/272/273/274/275/276/277/278/279/280/281/282/283/284/285/286/287/288/289/290/291/292/293/294/295/296/297/298/299/300/301/302/303/304/305/306/307/308/309/310/311/312/313/314/315/316/317/318/319/320/321/322/323/324/325/326/327/328/329/330/331/332/333/334/335/336/337/338/339/340/341/342/343/344/345/346/347/348/349/350/351/352/353/354/355/356/357/358/359/360/361/362/363/364/365/366/367/368/369/370/371/372/373/374/375/376/377/378/379/380/381/382/383/384/385/386/387/388/389/390/391/392/393/394/395/396/397/398/399/400/401/402/403/404/405/406/407/408/409/410/411/412/413/414/415/416/417/418/419/420/421/422/423/424/425/426/427/428/429/430/431/432/433/434/435/436/437/438/439/440/441/442/443/444/445/446/447/448/449/450/451/452/453/454/455/456/457/458/459/460/461/462/463/464/465/466/467/468/469/470/471/472/473/474/475/476/477/478/479/480/481/482/483/484/485/486/487/488/489/490/491/492/493/494/495/496/497/498/499/500/501/502/503/504/505/506/507/508/509/510/511/512/513/514/515/516/517/518/519/520/521/522/523/524/525/526/527/528/529/530/531/532/533/534/535/536/537/538/539/540/541/542/543/544/545/546/547/548/549/550/551/552/553/554/555/556/557/558/559/560/561/562/563/564/565/566/567/568/569/570/571/572/573/574/575/576/577/578/579/580/581/582/583/584/585/586/587/588/589/590/591/592/593/594/595/596/597/598/599/600/601/602/603/604/605/606/607/608/609/610/611/612/613/614/615/616/617/618/619/620/621/622/623/624/625/626/627/628/629/630/631/632/633/634/635/636/637/638/639/640/641/642/643/644/645/646/647/648/649/650/651/652/653/654/655/656/657/658/659/660/661/662/663/664/665/666/667/668/669/670/671/672/673/674/675/676/677/678/679/680/681/682/683/684/685/686/687/688/689/690/691/692/693/694/695/696/697/698/699/700/701/702/703/704/705/706/707/708/709/710/711/712/713/714/715/716/717/718/719/720/721/722/723/724/725/726/727/728/729/730/731/732/733/734/735/736/737/738/739/740/741/742/743/744/745/746/747/748/749/750/751/752/753/754/755/756/757/758/759/760/761/762/763/764/765/766/767/768/769/770/771/772/773/774/775/776/777/778/779/780/781/782/783/784/785/786/787/788/789/790/791/792/793/794/795/796/797/798/799/800/801/802/803/804/805/806/807/808/809/810/811/812/813/814/815/816/817/818/819/820/821/822/823/824/825/826/827/828/829/830/831/832/833/834/835/836/837/838/839/840/841/842/843/844/845/846/847/848/849/850/851/852/853/854/855/856/857/858/859/860/861/862/863/864/865/866/867/868/869/870/871/872/873/874/875/876/877/878/879/880/881/882/883/884/885/886/887/888/889/890/891/892/893/894/895/896/897/898/899/900/901/902/903/904/905/906/907/908/909/910/911/912/913/914/915/916/917/918/919/920/921/922/923/924/925/926/927/928/929/930/931/932/933/934/935/936/937/938/939/940/941/942/943/944/945/946/947/948/949/950/951/952/953/954/955/956/957/958/959/960/961/962/963/964/965/966/967/968/969/970/971/972/973/974/975/976/977/978/979/980/981/982/983/984/985/986/987/988/989/990/991/992/993/994/995/996/997/998/999/1000/1001/1002/1003/1004/1005/1006/1007/1008/1009/1010/1011/1012/1013/1014/1015/1016/1017/1018/1019/1020/1021/1022/1023/1024/1025/1026/1027/1028/1029/1030/1031/1032/1033/1034/1035/1036/1037/1038/1039/1040/1041/1042/1043/1044/1045/1046/1047/1048/1049/1050/1051/1052/1053/1054/1055/1056/1057/1058/1059/1060/1061/1062/1063/1064/1065/1066/1067/1068/1069/1070/1071/1072/1073/1074/1075/1076/1077/1078/1079/1080/1081/1082/1083/1084/1085/1086/1087/1088/1089/1090/1091/1092/1093/1094/1095/1096/1097/1098/1099/1100/1101/1102/1103/1104/1105/1106/1107/1108/1109/1110/1111/1112/1113/1114/1115/1116/1117/1118/1119/1120/1121/1122/1123/1124/1125/1126/1127/1128/1129/1130/1131/1132/1133/1134/1135/1136/1137/1138/1139/1140/1141/1142/1143/1144/1145/1146/1147/1148/1149/1150/1151/1152/1153/1154/1155/1156/1157/1158/1159/1160/1161/1162/1163/1164/1165/1166/1167/1168/1169/1170/1171/1172/1173/1174/1175/1176/1177/1178/1179/1180/1181/1182/1183/1184/1185/1186/1187/1188/1189/1190/1191/1192/1193/1194/1195/1196/1197/1198/1199/1200/1201/1202/1203/1204/1205/1206/1207/1208/1209/1210/1211/1212/1213/1214/1215/1216/1217/1218/1219/1220/1221/1222/1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# Building Types Eligible for ENERGY STAR



**Bank/Financial  
Institutions**



**Courthouses**



**Data Centers**



**Dormitories**



**Hospitals**



**Hotels**



**Houses of  
Worship**



**K-12 Schools**



**Medical Offices**



**Office Buildings**



**Retail Stores**



**Senior Care  
Communities**



**Supermarkets**



**Warehouses**



**Wastewater  
Treatment Plants**

## Why Certify?

- ENERGY STAR labeled buildings consistently use, on average, 35% less energy and emit 35% less carbon dioxide
- EPA backs results of higher net operating income and asset value in ENERGY STAR labeled buildings
- Savings persist over time
- Occupancy/tenant retention is higher

## Even Small Business Can Do It

- Managing energy performance isn't just for mid-to-large business
- If you just have a few meters – electricity, gas, and water – you can organize your data, establish a base-line and start benchmarking your energy efficiency projects
- See ENERGY STAR's Portfolio Manager for weather-normalized data
- Office and Retail spaces can qualify for ENERGY STAR certification if they are over 5,000 square feet

# The Technological Evolution is Now

- Convergence of energy, information and communications, building, and transportation technologies are transforming how we live, work, travel, shop, and play
- Innovative technologies will continue to improve efficiencies of today's buildings, urban infrastructure, industrial production, and other energy-intensive activities.

# The Technological Evolution is Now

- Energy technology is becoming decentralized, cleaner, better managed, and easier to store. Utilities understand that it's cheaper to incentivize energy efficiency than it is to generate new energy.
- Information and communication technologies are making every device, building, and vehicle smarter, Internet-connected, so that it can be monitored, controlled and optimized. This requires new tools and technologies to turn knowledge into action. The ability to harness Big Data will become a core competitive strategy.

# The Technological Evolution is Now

- Buildings are becoming more intelligent, energy efficient, more comfortable and healthier for people.
- The amount of square feet certified under LEED for Existing Buildings surpassed the figure for New Construction.
- ENERGY STAR program is experiencing explosive growth.
- This is key because there is vastly more existing building stock

# Case Study: St. John's Medical Center

- Sister-driven leadership at the top  
<Buy-In>
- University of Oklahoma Lean Institute Lean and Green Training  
<Accountability>
- Formed a Green Team  
<Set Goals, Identify Opportunities, Assign Tasks, Create Processes>
- Communicate results and share successes



## Case Study: St. John's Medical Center

- Energy Policy: Continual evaluation, staff education, equip selection, new technologies
  - Use energy management web portal to track utility usage
  - IT/computers, lighting/common areas, HVAC chill-water resets
  - 4 of 5 St. John's hospital campuses will earn ENERGY STAR rating
  - **\$250,000 in cost savings from electricity reducing measures**

## Case Study: St. John's Medical Center

- Recycling Policy: Batteries, cardboard, white paper, electronics, medical waste, plastic, glass
  - Styrofoam reduction program; wash and re-use program; office supply reuse
  - Each department now “does their own thing,” mind-set change
  - **\$200,000 in cost annual savings from paper and supply-reducing measures**

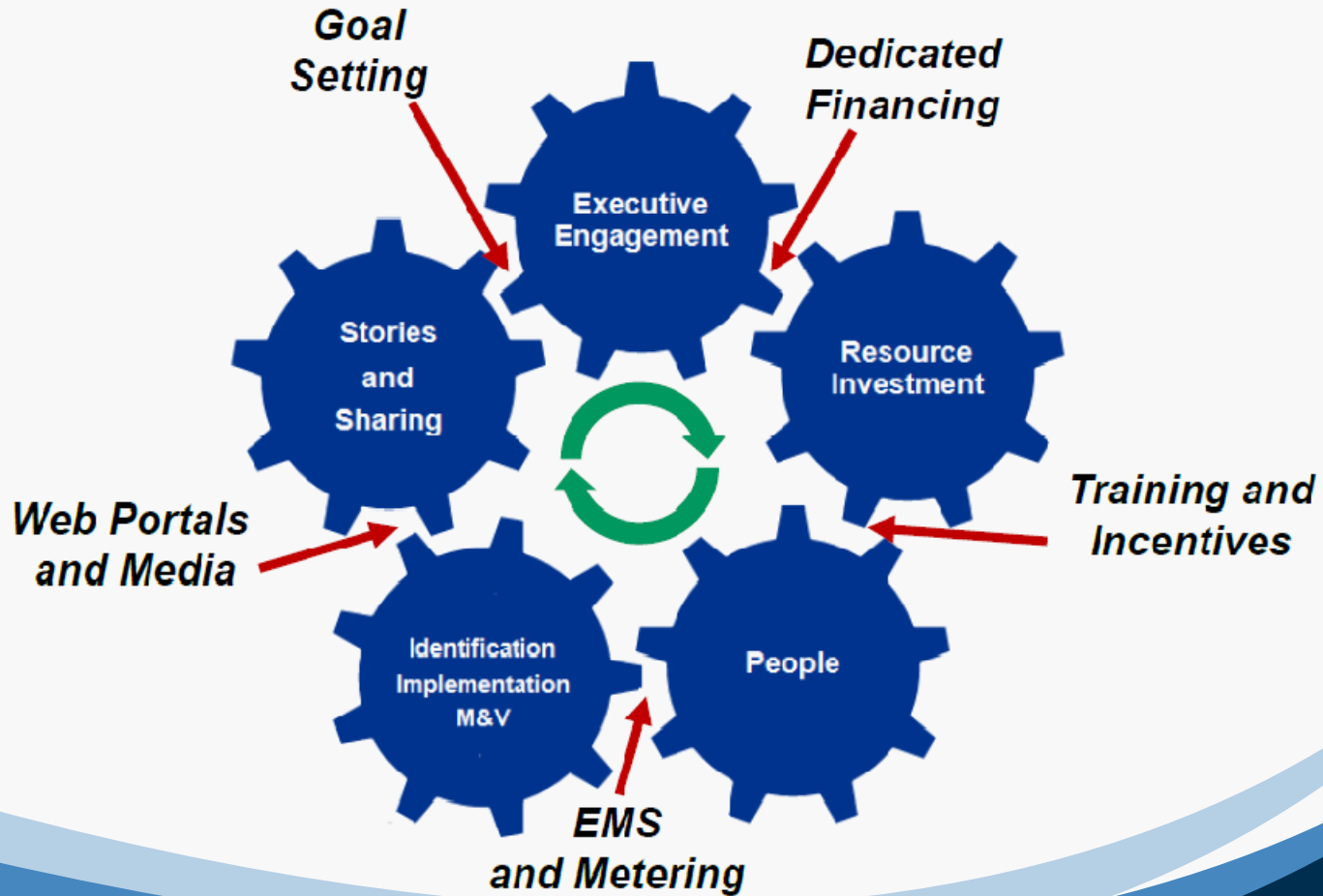
# The Virtuous Cycle



# Barriers Create Friction



# Lubing the Gears



# Trends Shaping The Sustainability Profession

- Strategy is Job No. 1 The primary task of all sustainability professionals is helping senior management develop a sustainable strategy that synchs with their company's overall goals.
- Find champions with influence The ability to work across functions is more critical than where in the company they sit.
- Energy Management systems are like Accounting systems CFOs are playing a growing role in sustainability issues.
- Establish good outside partners Service providers, suppliers, and non-profits, like Sustainable Tulsa!