



Energy Efficiency in Existing Multi Family Buildings

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Green Squared Multi Family Focus

We provide solutions to any Multi Family Owner, Developer, Tenant, or Apartment Manager asking one of the following questions:

- How do I reduce my energy costs?
- How do I increase my property valuation?
- How do I select capital improvements to my property?
- How do I get maximum payback and returns on my capital dollars?
- How do I value the current energy efficiency on acquisition targets?
- How do I qualify or certify for a 179D tax deduction?
- How do I secure utility rebates, incentive tax credits, or other incentives?
- How do I evaluate if LEED or Energy Star is the right approach for my building?
- How do I differentiate my building in a tough economic environment?



Green Squared Expertise

Our team of professionals brings over 100 years of engineering, design, construction, LEED certification and finance experience to every project and has performed jobs in every state in the country. We hold the following professional certifications and licenses:

- Professional Engineer (PE)
- Certified Energy Manager (CEM)
- LEED Accredited Professional (LEED AP)
- Mechanical Contracting
- General Contracting
- Certified Public Accountant (CPA)
- Juris Doctorate (JD)

Our team is committed to providing innovative solutions for a wide variety of project challenges, including:

- Multifamily Residential Units (Garden, Urban, High Rise and Low Rise),
- Hospitality, including Hotels, Spas, Conference and Convention Centers, and Country Clubs
- Commercial Office Buildings
- Shopping/Retail
- Industrial and Manufacturing Facilities
- Universities and other School and Educational Facilities



Agenda

- What is Energy Efficiency?
- Why Address Energy Efficiency in Existing Multi Family Buildings?
- Benefits of Energy Efficiency in Existing Multi Family Buildings
- Elephant in the Room
 - Role of Government
 - Role of Property Owners
 - Role of Residents
- Conclusion



What is Energy Efficiency?





This is Energy Efficiency

“This may sound too good to be true, but the U.S. has a renewable-energy resource that is perfectly clean, remarkably cheap, surprisingly abundant and immediately available.

It has astounding potential to reduce the carbon emissions that threaten our planet, the dependence on foreign oil that threatens our security and the energy costs that threaten our wallets.

Unlike coal and petroleum, it doesn't pollute; unlike solar and wind, it doesn't depend on the weather; unlike ethanol, it doesn't accelerate deforestation or inflate food prices; unlike nuclear plants, it doesn't raise uncomfortable questions about meltdowns or terrorist attacks or radioactive-waste storage, and it doesn't take a decade to build.

It isn't what-if like hydrogen, clean coal and tidal power; it's already proven to be workable, scalable and cost-effective.

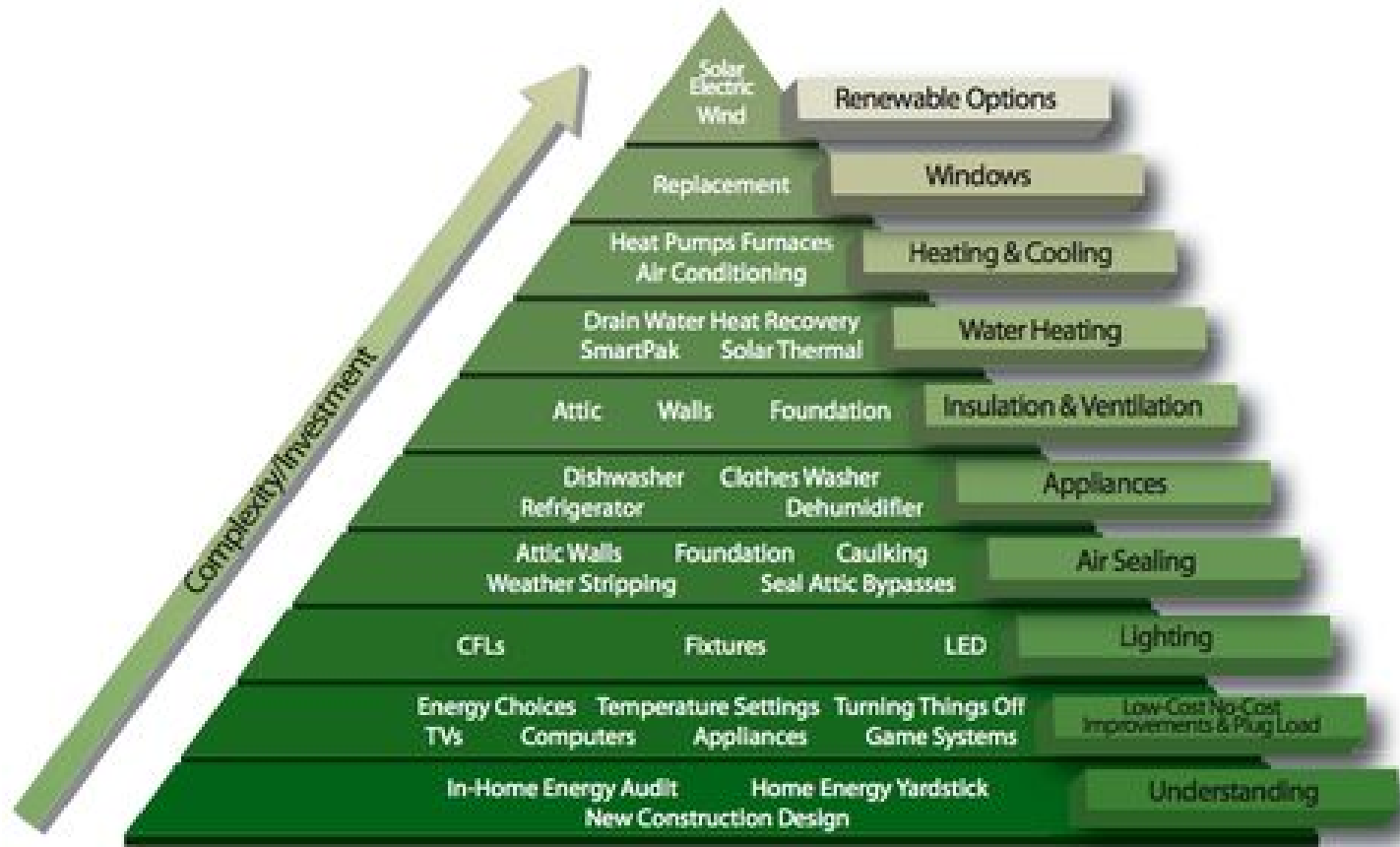
And we don't need to import it.”

-- *Time Magazine, December 31, 2008*





Energy Efficiency Pyramid



From the Green Building Advisor





Why Address Energy Efficiency in Existing Multi Family Buildings?

- Commercial and Residential Building Breakdown:
 - 39% HVAC
 - 18% Lighting
 - 10% Water heating
 - 9% IT/electronics
 - 24% Other
- US Buildings are responsible for:
 - 39% of US energy consumption (all types)
 - 72% of US electricity consumption
 - 55% of US natural gas consumption
 - 14% of US potable water consumption
 - 43% of US carbon emissions
- 72% of existing US buildings were constructed before 1990





Benefits of Energy Efficiency in Existing Multi Family Buildings

- Lower annual electrical and water costs
- Increased asset values
- Increased rents
- Improved indoor air quality
- Improved tenant satisfaction, attraction, and retention
- *“Green that makes cents”*





Financial Payback Analysis

- Includes gross project cost, applicable rebates, annual operating savings from energy and water reductions, tax benefits for SPP
- Payback periods are a good place to start
- Energy savings as hedge against rising energy and water costs



Example energy efficiency solution design model

Modeled Building to Proposed Design

Energy Conservation Measures

Project Category	Existing Building Model Values		Proposed Design - Anticipated Values		Variance - Proposed to Model	
	Energy Use (kWh/yr)	Energy Cost (\$/yr)	Energy Use (kWh/yr)	Energy Cost (\$/yr)	Energy Use (kWh/yr)	Energy Cost (\$/yr)
Air System Fans	416,026	26,091	475,315	34,741	(59,289)	(8,650)
Cooling	1,138,379	71,086	445,836	32,800	692,543	38,286
Heating	3,032,896	163,615	2,034,412	109,750	998,484	53,865
Pumps	21,557	1,365	21,557	1,365	-	-
Elect. Water Heater (Guest)	630,696	39,578	-	-	630,696	39,578
Gas Water Heater (Guest)	-	-	788,269	18,147	(788,269)	(18,147)
Interior Lights	1,314,663	82,446	1,314,663	82,446	-	-
Electric Plug Load	469,555	29,447	469,555	29,447	-	-
Ext. Light, elevators, etc.	60,295	3,784	60,295	3,784	-	-
Kitchen/Laundry (Gas)	4,063,708	93,654	4,063,708	93,654	-	-
Total	11,147,775	\$ 511,066	9,673,610	\$ 406,134	1,474,165	\$ 104,932

HVAC & HW Total	5,239,554	\$ 301,735	3,765,389	\$ 196,803	1,474,165	\$ 104,932
Int. Lighting Total	1,314,663	\$ 82,446	1,314,663	\$ 82,446	-	\$ -
Other Total	4,593,558	\$ 126,885	4,593,558	\$ 126,885	-	\$ -



Example Payback Analysis

Green 2 Solution Contract Price **\$ 615,000**

Year 1 Cash to Client:

KW Demand Reduction \$ (59,150)

KWh Reduction \$ (40,156)

Total **\$ (99,306)**

Net Cost of Retrofit **\$ 515,694**

Recurring Savings (Year 2 forward)

Tax Benefit on Depreciation \$ (4,628)

Plumbing and HVAC Operating Savings \$ (193,788)

\$ (198,416)

Payback on Net Cost (yrs)	2.60
Return on Investment	38.5%



Industry Outlook on Green

- 13.6% Decreased Operating Costs
- 10.9% Increased Building Values
- 9.9% Improvement in ROI
- 6.4% Increased Occupancy
- 6.1% Rent Rise

Source: McGraw Hill Green Outlook 2009, McGraw-Hill Construction Smart Market Report 2008



Elephant in the Room

- Split Incentive Issue for Multi Family Owners
 - Who pays the bills versus who pays for the retrofit?
 - Most government plans target residents or owners, ignoring Multi Family owners





Role of Multi Family Property Owners

- Identify common area energy hogs
 - Irrigation
 - Pools
 - Hallway lighting
- Invest in resource saving activities
- Market what you are doing to tenants
- Sub-meter, if not already



Role of Government/Utilities

- Texas allows PACE (property assessed clean energy) financing; we need to enact PACE in Harris County
- On-bill financing from utility companies
- Aggressive (and flexible) rebate programs for electricity, natural gas and water conservation
- Bring Multi Family owners to the table when structuring above
- Push retrofit incentives over new build incentives



Role of Residents

- Identify and notify owners of leaks
- Recycle programs
- Seek to conserve even when no financial incentive
- Replace with the right lightbulbs
- If you are not part of the solution, you are part of the problem



Conclusion

Energy and water efficiency requires participation of:

- Multi Family owners and managers
- Government
- Local resource managers/utilities
- Tenants

Sustainability is no longer cost prohibitive; it is a requirement



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