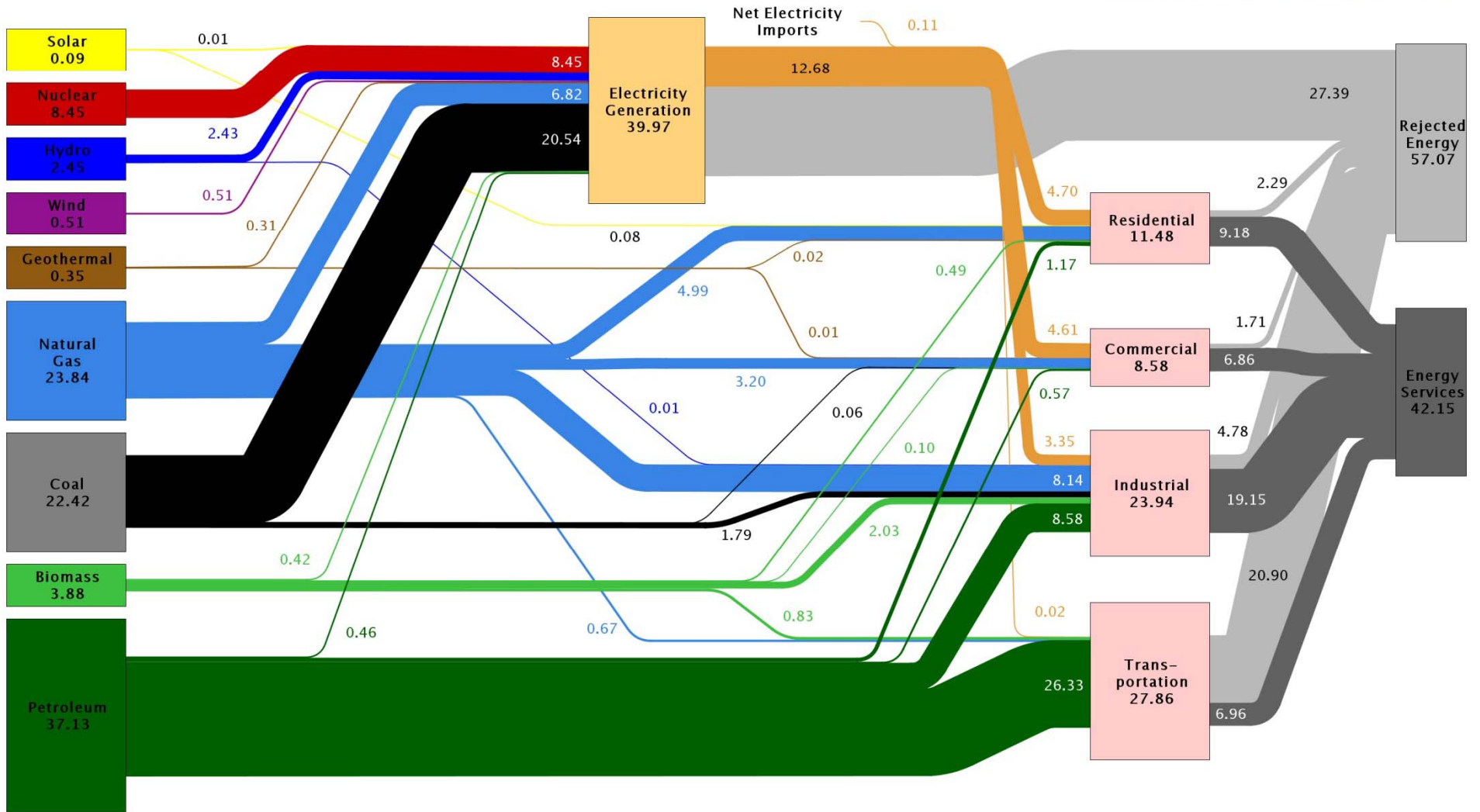


Energy Management and Third Party Financing in the New Economy

ENERGENT
SOLUTIONS

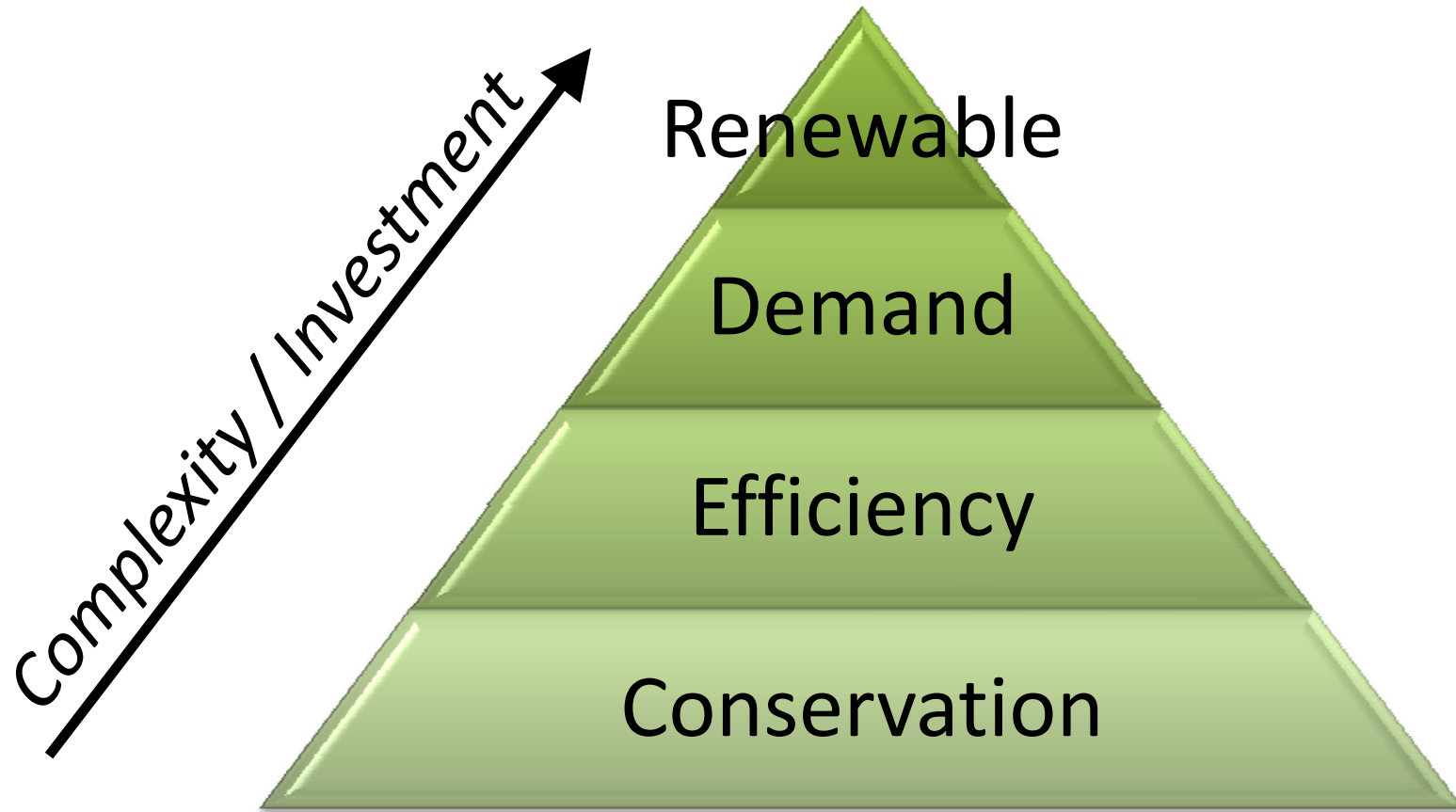
Marty Lanning, LEED AP

Estimated U.S. Energy Use in 2008: ~99.2 Quads



Source: LLNL 2009. Data is based on DOE/EIA-0384(2008), June 2009. If this information or a reproduction of it is used, credit must be given to the Lawrence Livermore National Laboratory and the Department of Energy, under whose auspices the work was performed. Distributed electricity represents only retail electricity sales and does not include self-generation. EIA reports flows for non-thermal resources (i.e., hydro, wind and solar) in BTU-equivalent values by assuming a typical fossil fuel plant "heat rate." The efficiency of electricity production is calculated as the total retail electricity delivered divided by the primary energy input into electricity generation. End use efficiency is estimated as 80% for the residential, commercial and industrial sectors, and as 25% for the transportation sector. Totals may not equal sum of components due to independent rounding. LLNL-MI-410527

Energy Pyramid



ENERGY STAR Portfolio Manager

- ENERGY STAR brand recognized by 65% of Americans
- Track success of energy strategy
- Data Center space model released June 2010
- Normalize energy consumption to account for weather, size + building activity
- Utilized by:
 - USGBC
 - U.S. Government
 - State of Ohio
 - City of Columbus
 - Ohio public colleges + universities
 - Ohio Hospital Association
 - Utilities and Trade groups

ENERGY STAR Model Objective

- Develop regression model to predict PUE
 - Include factors that are outside of the control of the owner/operator
 - Factors for adjustment determined based on data collection and analysis
- Compare actual PUE to predicted PUE
 - More efficient data centers will have lower PUE than is predicted
- Express data center efficiency as a 1-to-100 ENERGY STAR rating
 - Each point on rating scale equals 1 percentile of data centers

Data Center Space Model

- Methodology works for stand-alone Data Centers and for larger buildings that contain a combination of Data Center with other ratable space types.
- Requirement inputs:
 1. Gross floor area
 2. IT energy configuration
 - UPS Output or PDU Input
 3. IT energy meters usage (kWh) per period



Third Party Funds for Energy Projects

AEP's gridSMARTSM

- Up to 50% of total project cost
 - Simple payback 1 year min / 7 year max
- 1. Prescriptive**
 - Lighting, Motors, VFDs, HVAC
 - 2. Custom**
 - 3. Self-Direct**
 - Historic projects since 1.1.2007
 - 75% payout of Prescriptive + Custom



AEP's gridSMARTSM [cont'd]

- Application on website
www.gridsmartohio.com
- Incentive limit \$300,000 per project
- Customer limits

General Service Tariffs 1, 2, & 3	\$600,000 per year
Any Other Tariff	\$600,000 overall for years 2009-2011

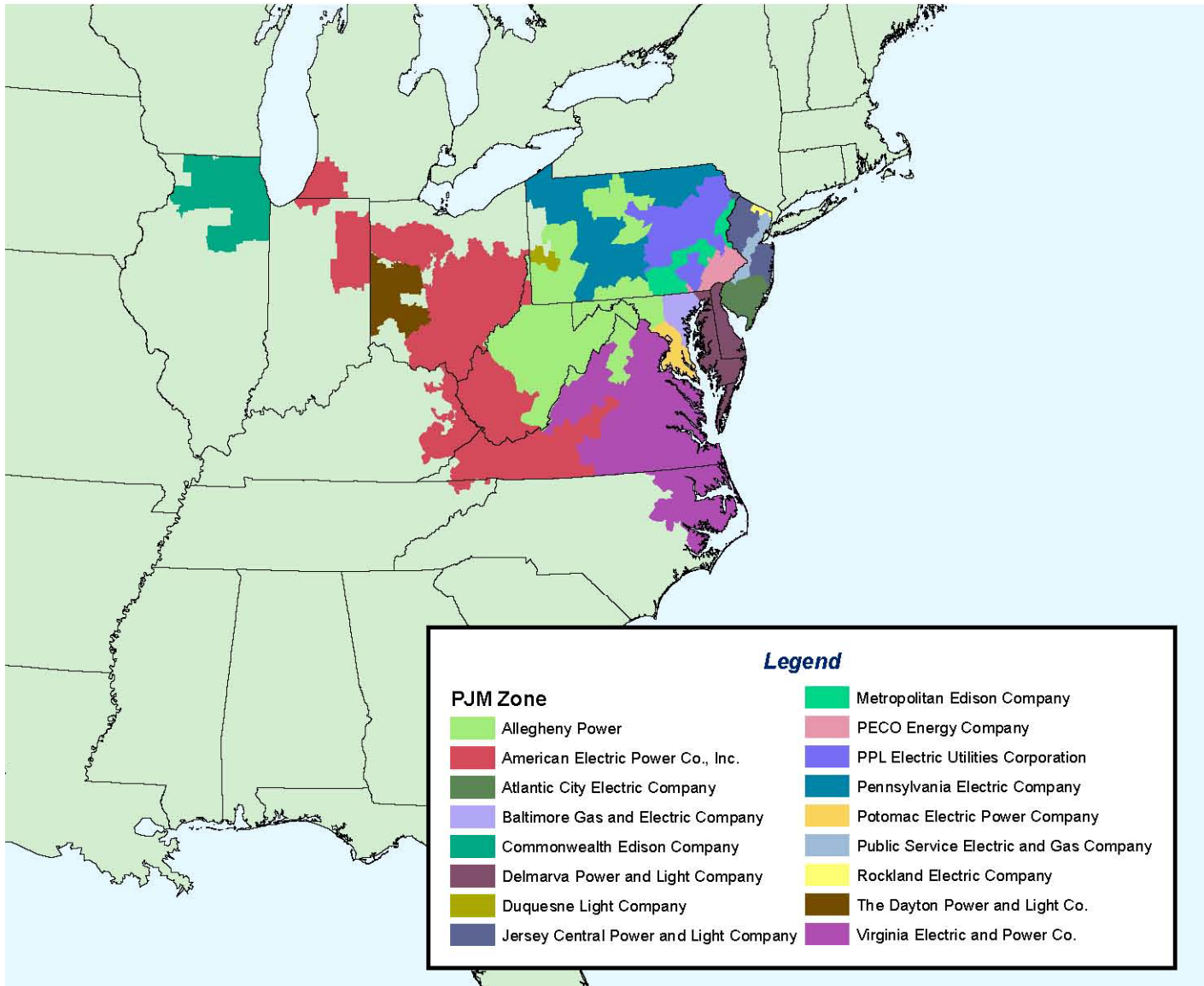


Federal funding

- Energy Efficient Commercial Buildings Tax Deduction [EPACT 2005 or 179D]
 - \$1.80 per square foot
 - \$0.60 each for lighting, mechanical and building envelope

Demand Response

- Federally regulated program
 - Temporary changes in electric usage by consumers in response to incentive payments
 - 2011-2012 Program estimated to pay \$20,000 per 1,000 kW
 - Over 11,000 customers participating in 2010-2011 Program
- Customers can reduce electric usage off the grid in two ways:
 - Self Generation: backup generators
 - Usage Reduction (for short periods of time) via turning off lights, raising A/C set points, etc.



PJM Program “Event” History

	Total Events	Total Hours Yr
2002	3	13:00
2003	0	0:00
2004	0	0:00
2005	2	5:00
2006	2	6:00
2007	1	4:00
2008	0	0:00
2009	0	0:00
Avg/Year	1.00	3:30

No events in OH, PA, WV to date!

Energy Management Best Practices

1. Keep a copy of historical utility bills
2. Keep separate file of all electrical + mechanical project invoices for new construction and retrofits
3. Measure Performance + Benchmark
 - ENERGY STAR Portfolio Manager becoming de-facto standard
4. Utilize Third Party funds to kickoff savings
 - Include utility in planning process