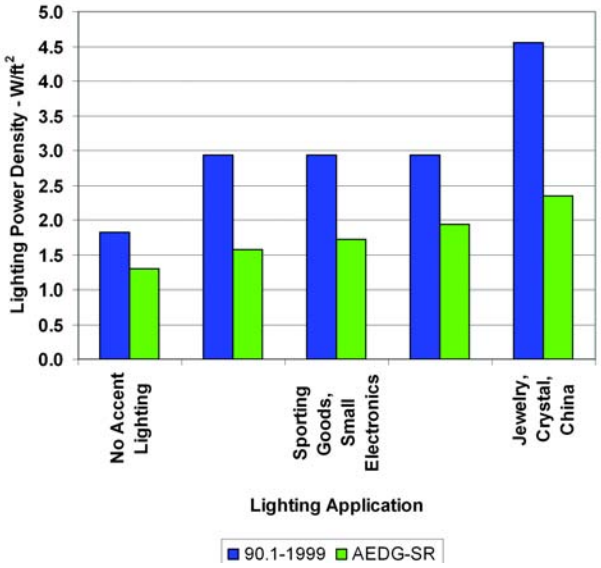

Figure 2-2. Lighting power densities.

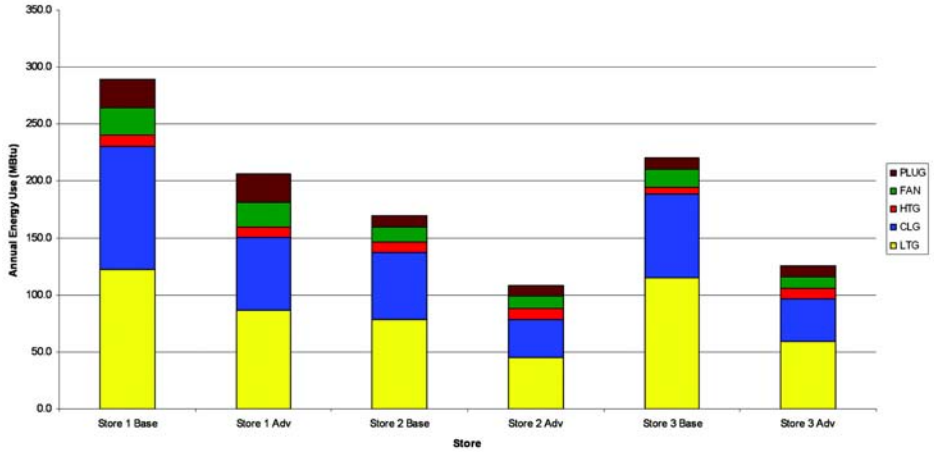

Figure 2-3. Strip mall energy use for three stores in Phoenix.

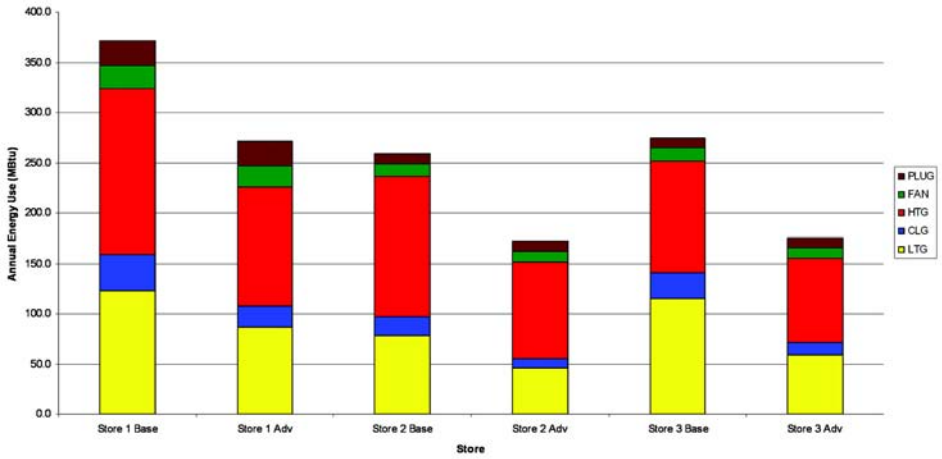

Figure 2-4. Strip mall energy use for three stores in Chicago.

Table 2-1. Energy Goals in the Context of the Design Phase
A typical "integrated" design process includes the following steps in sequence, with energy-related actions flagged (⁜).

Activities	Responsibilities	Where to Find Information
1. Select Team a. Design Team b. QA Provider c. Construction Team	Owner evaluates potential service providers and selects team.	Chapter 5, QA1 and QA2
2. Owner's Project Requirements (OPRs)[a] ⁜ a. Choose Recommendation Table Items b. Codes/Standards Requirements	Owner and CxA define the OPRs and goals.	Chapter 2, Table 2-5[b] Chapter 3
3. Define Budget a. Develop and Review Design Budget b. Develop and Review Construction Budget c. Develop and Review QA Budget	Owner, GC, Designer Owner, Designer Owner, GC, Estimator Owner, CxA	Chapter 5, QA4
4. Select Implementation Recommendations ⁜ a. Specify System Preferences b. Update OPR document c. Check for Rebate/Incentive Programs	Owner, Designer, GC	Chapter 3 Chapter 5, QA3
5. Develop Design and Construction Schedule	Owner, GC, Designer	Chapter 5, QA5
6. Design Development ⁜ a. Develop Building Plans, Sections, and Details Incorporating above Strategies b. Develop HVAC Load Calculations c. Size HVAC Equipment d. Integrate QA Specifications into Project Manual e. Specify ENERGY STAR® Appliances	Designer, CxA	Chapter 5
7. Construction Documents a. Develop Lighting and Equipment Details b. Develop Outdoor Air Management Details	Owner, Designer, GC	Chapter 5, Lighting Chapter 5, Outdoor Air
8. Design Review ⁜ — Verify That Project Meets Original Goals	Owner, Designer, CxA, GC	Chapter 3 Chapter 5
9. Perform Final Coordination and Integration of Architectural, Mechanical, and Electrical Systems	Designer	Chapter 3 Chapter 5
10. Perform Final Cost Estimates	GC, Estimator	
11. Review Final Design Documents	Owner, Designer, CxA	Chapter 3 Chapter 5, QA6

a. The OPR document is a written document that details the intent for energy efficiency, measurable performance criteria, sustainability, functional requirements, and the expectations of how the facility will be used and operated. See Chapter 3 for specific recommendations for each of the building components. Lists of implementation examples are provided in Chapter 5.

b. Table 2-5 presents four goals along with specific strategies for achieving energy savings in retail construction. Reducing loads (Goal 1), both internal and external, is the most basic. Matching the capacity of energy-using systems to the reduced loads (Goal 2) is also important. Oversized systems cost more and do not operate at their optimum efficiency. Higher efficiency equipment (Goal 3) will use less energy to meet any given load. Thus, high-efficiency equipment, in systems whose capacity matches peak loads, serving a building designed and constructed to the lowest practical loads, will result in the lowest energy use and cost. And finally, Goal 4 addresses the integration of building systems to increase energy savings potential.