

Energy Services That Work Guidebook: An Energy Efficiency Resource for Public Power

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Resource
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- APPA represents more than 2,000 community-owned electric utilities serving more than 46 million customers
- Each public power utility—operational characteristics, resource profile, and customer class sizes—is unique
- 1,400 public power systems serve communities with populations of 10,000 or fewer
- A 2008 APPA survey of public power utilities found that 54 percent of respondents had time-of-use or incentive rate programs and 43 percent offered load response (peak shaving) programs.



American Public Power Association Demonstration of Energy-Efficient Developments (DEED) Program

- R&D program funded by and for public power utilities
- Begun in 1980, to invest in the future technologies & best practices of the electric industry. Members use their utilities as laboratories to pilot test innovative technologies and develop resources to improve utility processes and practices.
- Provides project grants and recognition awards to member utilities and other research organizations
- Provides scholarships and research grants to university students interested in public power

Energy Services That Work offers programmatic information for utilities developing energy service programs

In 2009, BCS was selected by APPA/DEED to update the *Energy Services That Work* guidebook

The new, online guidebook features 20 programs across four customer groups:

1. Residential
2. Commercial / Community
3. Industrial
4. Agricultural

Energy Services That Work
A Comprehensive Guide for Understanding and Implementing Utility Demand Side Management and Energy Services Programs

American Public Power Association's *Energy Services That Work* is a handbook to help utilities sort through the various options for energy services programs and decide on the best-suited program(s) for themselves and their customer base. It also lays out the implementation steps and resource requirements to guide the utility staff and ease the process of implementing energy services programs.

The handbook covers 21 programs a commercial/community, industrial, and agricultural. Practices, insights, and pitfalls to avoid, and considerations will enable utilities to enjoy wide participation and maximize customer benefits.

Energy Services That Work provides information on 20 programs specifically intended for management, or a combination of the information:

- Utility and customer benefits
- Economic analysis
- Implementation processes
- Utility resource requirements
- Technologies used during implementation
- Common challenges
- Recommended marketing and outreach
- Examples of similar energy services programs

The handbook is available by chapter below. Each link will take the reader to the full document (viewing requires Adobe Acrobat).

Chapters:

1. Introduction [PDF - 612 KB](#)
2. Economic Analysis [PDF - 429 KB](#)
3. Residential Energy Audits [PDF - 709 KB](#)
4. Residential Design Assistance [PDF - 2.0 MB](#)
5. Residential Heating [PDF - 816 KB](#)
6. Residential Air Conditioning [PDF - 705 KB](#)
7. Residential Hot Water Heating [PDF - 1.3 MB](#)
8. Residential Appliances and ENERGY STAR [PDF - 939 KB](#)
9. Residential Certifications and Mortgages [PDF - 550 KB](#)
10. Residential Rate Design and Direct Load Control [PDF - 460 KB](#)
11. Commercial Energy Audits [PDF - 550 KB](#)
12. Commercial Design Assistance [PDF - 610 KB](#)
13. Commercial Lighting [PDF - 551 KB](#)
14. Commercial HVAC Systems [PDF - 645 KB](#)
15. Commercial ENERGY STAR [PDF - 420 KB](#)
16. Commercial Refrigeration [PDF - 442 KB](#)
17. Industrial Energy Audits [PDF - 566 KB](#)
18. Industrial Process Equipment [PDF - 630 KB](#)
19. Industrial Rate Design and Load Management [PDF - 504 KB](#)
20. Industrial Combined Heat and Power [PDF - 859 KB](#)
21. Agricultural Energy Use and Design Assistance [PDF - 669 KB](#)
22. Agricultural Equipment and Load Control [PDF - 611 KB](#)

Note: An original version of *Energy Services That Work* was published by APPA in 1995. Given the extensive advances in energy technologies and the vast changes in electricity demand and supply landscape over the years, this is a rewrite of the previous version.

APPA American Public Power Association DEED



Why Offer Energy Service Programs?

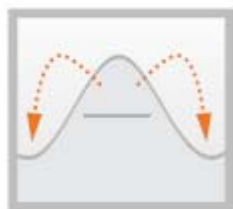
- Reduce costs
- Comply with regulations
- Allow for the lowering of rates
- Increase revenue for:
 - Distribution system operations
 - Maintenance
 - Reinvestment in DSM programs



Peak Shaving



Conservation



Load Shifting



Load Building

1. Determine Broad Energy Services Objectives
2. Determine Load Shape Objectives
3. Select Programs to Impact Load Shape
4. Perform an Economic Analysis
5. Commit (and Obtain) Resources

Common Types of Customer Incentives

- Free programs
- Rebates
- Bill Credits
- Public Benefits Charge Credits
- Low-Interest Loans
- On-Bill Financing
- Waiving of Fees
- Accelerated Permitting

- **DSM Potential**
 - Number of customers expected to participate
 - Demand reductions expected as a result of the program
 - Energy savings expected as a result of the program
- **Energy Sales Impacts**
- **Power Demand**
- **Program Administration Costs**
- **Regulatory Considerations**
- **Simple Payback**
- **Present Value**
- **IRR**
- **Macroscopic Analysis**

Each chapter provides the following information:

- Utility and customer benefits
- Economic analysis
- Implementation processes
- Utility resource requirements
- Technologies used during implementation
- Common challenges
- Recommended marketing and outreach activities
- ***Examples of similar energy services programs offered by other utilities***
- Additional open source resources

Chapter 6: Residential Air Conditioning



Peak Shaving

Conservation

- **Key Term Definitions:**
 - Seasonal Energy Efficiency Ratio (SEER)
 - Energy Efficiency Ratio (EER)
 - Heating and Seasonal Performance Factor (HSPF)
- **Program Administration and Marketing**
- **Example Economic Analysis**

Why Implement the Program?

- Reduce peak demand
- Reduce lifetime energy use
- Reduce energy bills
- Increase level of home comfort
- Benefit the environmental
- Mitigate fossil fuel price volatility
- Help avoid summer peaks that can lead to blackouts

Duncan Power: GoodCents Program

- 8,800 customers in Oklahoma
- Energy Efficiency Program Resources
 - Energy efficiency conservation analyst (conducts energy audits)
 - \$25k budget for energy efficiency rebates
- A/C Rebates
 - Program began in 2008
 - Set rebates after requesting from local contractors the cost difference between an energy-efficient appliance and a standard appliance
- Program Target
 - Existing homes
- Program Payback
 - Three-year payback to the utility

System Efficiency(SEER Rating)	Payment per Ton (Air-to-Air Units Only)
17.00–17.99	\$150.00
18.00–18.99	\$175.00
19.00–19.99	\$200.00
20.0–20.99	\$225.00
21.00–21.99	\$250.00
22.00–22.99	\$275.00
23.00 and more	\$300.00

Chapter 11: Commercial Energy Audits



What Are the Potential Challenges?

- Raising customer awareness and educating customers
- Establishing the utility as the local energy expert
- Designing an audit program that attracts customers
- Ensuring the quality and accuracy of the audit

What Resources Will Be Required?

- Specially trained audit personnel
- Tools to analyze energy use at the commercial site
- Software tools for engineering study

Technologies

- Blower Door Test
- Infrared Imaging
- Lighting Tests
- Appliance Meters
- Software Analysis

Pascoag Utility District: Business Energy Audit

- 4,500 customers in Rhode Island
- began offering DSM programs in 1998
- DSM programs are funded through the state's public benefits charge of \$0.0023 (or 2.3 mills) per kWh
- Business Energy Audit Program
 - Approximately one business energy audit per month
 - Audit report provides projected costs, savings, and expected payback
 - 60 percent rebate on lighting and a 25 to 40 percent rebate on VFDs
- Program Payback
 - System peak before any utility DSM programs was 12.2 MW
 - After DSM program implementation, the peak has not gone above 11 MW (despite growing population and increased availability of electric equipment)
 - Saved money in demand charges from electricity wholesalers¹²

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To Purchase Access to the *Energy Services That Work* Guide:

(hard copy and web-based versions)

<http://www.publicpower.org/store/ProductDetail.cfm?ItemNumber=31344>