NAVIGANT

FIVE-YEAR PLAN FOR ENERGY EFFICIENCY

Prepared for:
Holy Cross Energy

HOLY CROSS ENERGY
A Touchstone Energy® Cooperative

Navigant Consulting, Inc.
1375 Walnut Street
Suite 200
Boulder, CO 80302
303.728.2500
www.navigant.com

July 15, 2011

Navigant Consulting has prepared this report at the request of Holy Cross Energy ("Holy Cross"). In preparing this report and/or analysis, Navigant Consulting has relied upon statements, records, projections, and work products of Holy Cross and its staff. Navigant Consulting has not independently confirmed the accuracy of this information. Navigant Consulting makes no representations or warranties with respect to the accuracy or completeness of the information relied on in this assessment, except that Navigant Consulting warrants that it has exercised reasonable care in conducting its work.

1 Table of Contents

Executive Summary

In the next five years, Holy Cross Energy (HCE) and its members will pursue actions to accelerate the achievement of energy savings from investments in energy efficiency (EE). This current planning effort responds to priorities identified in the 2009 member survey, in which HCE members indicated continued support for energy efficiency and renewable energy programs and goals.[1] HCE continues to look for new ways to empower its members and staff to take meaningful, cost-effective steps toward securing a reliable and cost-effective base of resources to meet its energy needs. This effort builds on six years of education and incentives through HCE's *With Efficiency, Conservation and Renewable Energy (WE CARE) Program*.

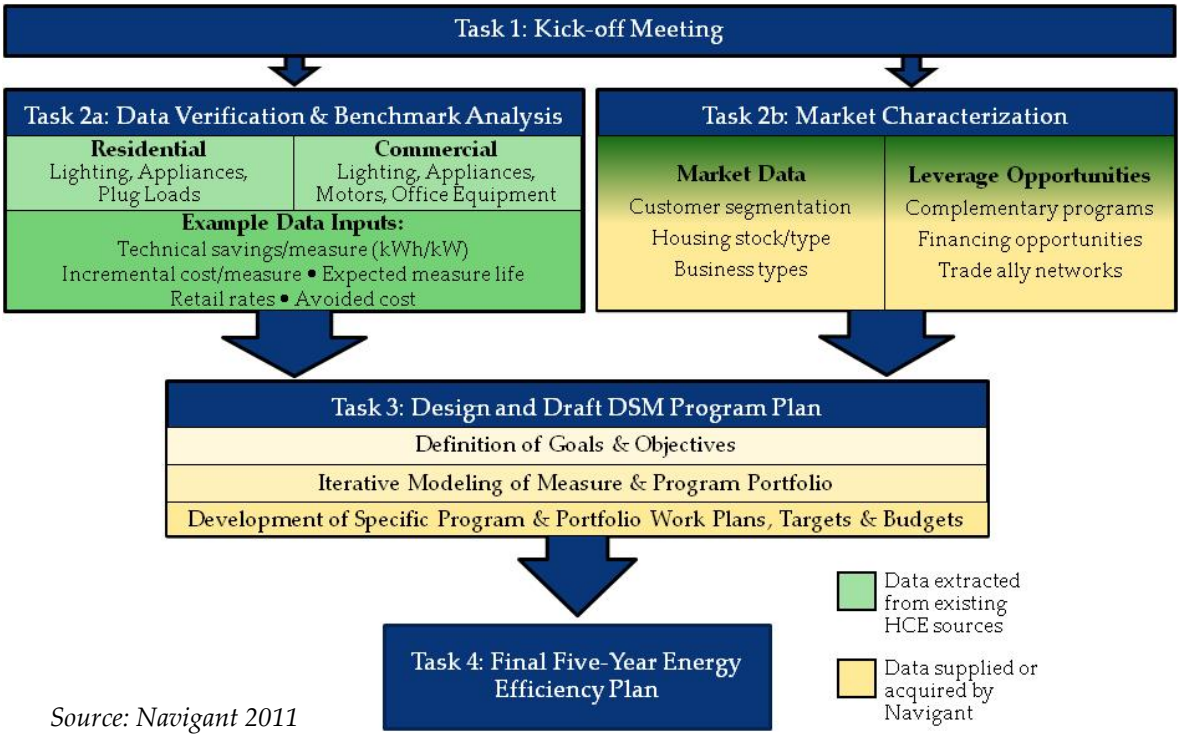
This five-year plan seeks to address HCE's commitment to achieving deeper energy savings through a portfolio of Demand Side Management (DSM) programs. The programs outlined in this plan build upon HCE's existing WE CARE efforts, combining analysis of HCE consumer- and market-specific data with industry benchmarks and best practices. The plan provides HCE with a practical roadmap for setting and achieving energy efficiency goals as well as helping HCE's commitment to providing consumers cost-effective carbon emission reduction opportunities.

Portfolio Planning Process

Navigant Consulting, Inc. (Navigant) used a data-driven approach to DSM program planning, drawing upon primary and secondary data sources that combine industry best practices and benchmarks with HCE's specific energy savings opportunities and market characteristics. Drawing on its extensive DSM program evaluation and planning experience and with the help of its proprietary DSM Portfolio Planning Model, Navigant's team synthesized this data to generate realistic program goals and budgets. By basing projections on hard data and quantifiable assumptions as much as possible, the plan provides for more effective measurement and evaluation strategies that HCE can use to make mid-stream adjustments based on updated participation rates and changing market characteristics. staff helped establish the availability of existing data sources, overarching goals and objectives, and the parameters within which the DSM programs must operate. The second major task included the incorporation of HCE's recent DSM potential study results and other economic assumptions into Navigant's program optimization model; it also included a review of industry benchmarks and best practices for cost-effective DSM program design and implementation. In addition, the team characterized HCE consumer energy usage, housing and business types, and opportunities to leverage complementary energy efficiency programs and trade ally networks (e.g., non-profits and local electric and heating, ventilating, and air conditioning [HVAC] contractors).

[1] GDS Associates, 2009, *2009 Member Survey: Attitudes on Carbon Emissions Reductions, Renewable Energy Resources and Smart Grid Technology,* Holy Cross Energy. Available: http://www.holycross.com/member-services/2009survey

Figure ES-1. Navigant DSM Program Portfolio Process



Source: Navigant 2011

Based on its Task 2 findings, Navigant shared preliminary program recommendations and solicited feedback from HCE's Energy Efficiency Task Force. Navigant incorporated this feedback in the subsequent iterative modeling process, wherein it defined energy savings goals and budgets for each DSM program using modeling software. The output of this analysis and the subsequent program design recommendations culminated in a Draft Five-Year Plan for Energy Efficiency (Draft Plan). Upon reviewing the Draft Plan, HCE's staff and Board of Directors provided additional direction on the portfolio's design. Specifically, HCE and its Board requested a reduction in the overall DSM portfolio budget and a reallocation of funds toward the plan's commercial sector programs.

Table ES- 1 outlines the Board's requested budget allocations for the Final Five-Year Plan for Energy Efficiency (Final Plan). Per the Board's direction, 60 percent of annual WE CARE Program funding will be reserved for the EE Portfolio. Two-thirds of that EE Portfolio funding will be allocated to commercial consumers, with the remaining one-third allocated to residential consumers. In addition, the residential allocation includes a budget set-aside for two cost-sharing programs that fall outside of the EE Portfolio's scope. HCE intends to lend support to the existing *Tri-County Energy Smart Program* and the *Low Income Weatherization Program* overseen by the Northwest Colorado Council of Governments.[2]

[2] The cost-sharing nature of these two programs made it too difficult to accurately model energy savings that would be attributable to HCE using the DSM Portfolio Planning Model.

Table ES- 1. Budget Allocations for EE Portfolio Programs

	2012	2013	2014	2015	2016	2012-2016
Baseline EE Portfolio Budget (60% of Annual WE CARE Budget)	**$1,406,618**	**$1,478,287**	**$1,560,060**	**$1,637,061**	**$1,714,775**	**$7,796,801**
Commercial EE Programs Budget for Five-Year Plan (67% of EE Portfolio Budget)	**$942,434**	**$990,452**	**$1,045,240**	**$1,096,831**	**$1,148,900**	**$5,223,857**
Residential EE Programs Budget (33% of EE Portfolio Budget)	$464,184	$487,835	$514,820	$540,230	$565,876	$2,572,944
Energy Smart and Low-Income Weatherization Program Contributions*	$100,000	$100,000				
Residential EE Programs Budget for Five-Year Plan	**$364,184**	**$387,835**	**$514,820**	**$540,230**	**$565,876**	**$2,572,944**

Note: Assumes $50,000 each is contributed annually in 2012 and 2013 to the Energy Smart Program and Low-Income Weatherization Program.

Source: Navigant 2011

Five-Year Energy Efficiency Portfolio Goals and Metrics

The Board-specified budget allocations and limits necessitated a top-down approach to determining annual energy savings goals. Using HCE's revised portfolio budget guidelines, Navigant developed energy saving goals based on DSM program results and best practices from 62 municipal and cooperative utilities across the country.[3] Table ES-2 summarizes the plan's resulting energy savings and investment targets. In setting these goals, the team accounted for HCE's particular market challenges and opportunities, as well as the changing landscape of energy efficiency technologies and standards. The first-year energy savings target of 0.45 percent of forecasted sales represents an aggressive goal for HCE. Subsequent annual targets increase as staff, trade ally, and participant activities gain momentum and create efficiencies.

Table ES-2. HCE Savings Goals and Planned Investments (2012-2016)

	2012	2013	2014	2015	2016
Incremental Energy Savings Goal as % of Sales	0.45%	0.51%	0.55%	0.55%	0.55%
Planned Investment as % of Revenues	1.11%	1.12%	1.20%	1.20%	1.20%

Source: Navigant 2011

HCE's planned goals and investment targets draw upon demonstrated industry best practices. Annual program budgets of *best practice organizations* are generally a factor of 2.0-2.5 times energy savings (as a

[3] Agapay, L. and R. Gunn. Summit Blue Consulting, 2010, *"Energy Efficiency Resource Standards for IOUs, Municipal, and Cooperative Utilities: Can One Size Fit All?"* American Council for an Energy-Efficient Economy (ACEEE) 5th National Conference on Energy Efficiency as a Resource.

percentage of sales). For example, achieving 0.5 percent energy savings requires a budget between 1.0 percent and 1.25 percent of sales. These budgets must account for utility administration and program implementation activities, consumer incentives, marketing and outreach, and measurement and evaluation. In the earliest years of program implementation, however, utilities may require slightly higher relative budgets to account for start-up costs.

Meeting these aggressive goals will require a significant effort by HCE to effectively allocate staff resources, develop targeted marketing strategies, and leverage networks of local partners (such as the *Energy Smart Program*). Local municipalities, environmental organizations, trade contractors, and retailers all play important roles in the success of utility-led DSM programs. Most programs will require additional planning, staff additions, external resources, and other preparations before launching. HCE should also expect to adjust goals and budgets in later years based on measurement and evaluation activities, changing consumer demands, emerging trends, and the political and economic landscape.

Table ES-3 shows forecasted portfolio-wide energy savings and spending based on Navigant's DSM Portfolio Planning Model outputs. Navigant proposes that HCE budget a total of $7.8 million in energy efficiency programs over the next five years, targeting cumulative annual energy savings of 2.47 percent against 2016 sales forecasts. Table ES-3 illustrates that HCE can likely meet these energy savings goals at or below proposed annual spending benchmarks, with 95 percent of targeted cumulative annual energy savings achieved using only 84 percent of forecasted budgets (about $6.55 million). **This equates to 2.35 percent savings against forecasted 2016 energy usage.**

Table ES-3. Investment and Savings Targets (2012-2016)

Investment	2012	2013	2014	2015	2016	Total
Spending Target as % of Revenue	1.11%	1.12%	1.20%	1.20%	1.20%	1.20%
Spending Target ($)*	$1,306,618	$1,378,287	$1,560,060	$1,637,061	$1,714,775	$7,596,801
Planned Investment ($)	$1,002,468	$1,209,744	$1,403,501	$1,437,910	$1,495,503	$6,549,126
% of Spending Target	77%	88%	90%	88%	87%	84%
Contingency Budget ($)	$304,150	$168,543	$156,559	$199,151	$219,272	$1,047,675
Savings	**2012**	**2013**	**2014**	**2015**	**2016**	**Cumulative**
Incremental Savings Goal as % of Forecasted Sales	0.45%	0.51%	0.55%	0.55%	0.55%	2.47%
Incremental Savings Goal (MWh)	5,392	6,299	6,941	7,106	7,301	33,039
Planned Incremental Savings (MWh)	4,550	5,928	6,715	6,997	7,316	31,506
Planned Incremental Savings as % of Forecasted Sales	0.38%	0.85%	1.35%	1.86%	2.35%	2.35%
% of Savings Goal	84%	94%	97%	98%	100%	95%

Note: Spending target excludes $100,000 budget set aside in 2012 and 2013 for the *Energy Smart* and *Low Income Weatherization Programs*. "Cumulative" values in the last column refer to annual energy savings planned by 2016. "Incremental" savings values represent new savings achieved each year.

Source: Navigant 2011

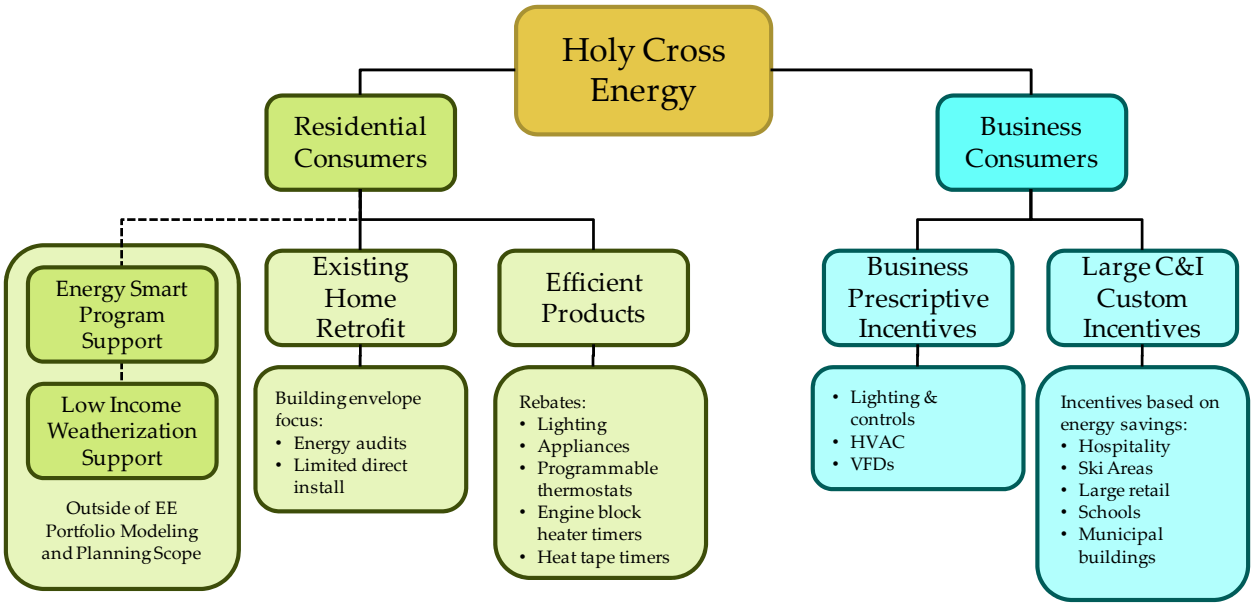
Table ES-3 also reveals the relatively conservative approach used to forecast program participation in the first year, with only 84% of the targeted savings achieved in the DSM Portfolio Planning Model. This shortfall primarily results from HCE using a low (but reasonable) assumption for the per-project energy savings provided by its *Large C&I Custom Grants Program*. This resulted in an annual contingency budget that will allow HCE flexibility to shift resources as programs ramp up and participation trends evolve. With targeted marketing of that program to large commercial and industrial (C&I) consumers with the highest electricity usage, Navigant anticipates that per-project savings will be substantially higher than the modeled assumption. This would consume contingency funds through increased incentives and program administration costs, and would subsequently close the savings gap.

This plan presents a five-year portfolio investment based on current revenue forecasts through 2016. HCE will need to adjust projected investment levels each year based on updated revenue forecasts and the availability of program funds. Additionally, HCE should review and adjust incentive levels and other program elements to reflect changes in market conditions or implementation processes in order to maximize cost-effective savings.

Recommended DSM Portfolio Summary

This section provides a brief overview of HCE's recommended DSM programs, including energy savings targets, budgets, and forecasted cost-benefit results. Figure ES-2 provides a graphic representation of HCE's recommended DSM program portfolio. In addition to "tried and true," proven-cost-effective measures, several of the programs include emerging technologies and energy-saving strategies that place HCE at the forefront of DSM program design. Navigant recommends HCE offer two residential programs and two business programs to achieve its energy savings goals most cost-effectively.

Figure ES-2. DSM Program Portfolio Structure



Source: Navigant 2011

It is important to note that Navigant defines "programs" by each specific market and technology end-use type primarily for planning purposes and to present projected savings, costs, and cost-effectiveness. During implementation, HCE should consider the best ways to present the programs to its consumers in

a more accessible manner. For example, the two residential programs might be marketed as the "Home Energy Assessment and Upgrade" and "Energy Efficient Product Rebates" programs, respectively.

Summary of Residential Programs

Navigant's recommended residential DSM programs build upon HCE's existing *WE CARE* program offerings and leverage other energy efficiency programs and incentives at the regional and state level. HCE should offer these programs as a unified residential program that seeks to help residents identify energy savings opportunities in their homes and to subsequently *take action* to reduce their energy use.

Existing Home Retrofit

This expansion and refocusing of HCE's home energy audit program will aggressively target cost-effective residential energy-saving measures, with a focus on converting home energy assessments to homeowner action through education and incentives. Currently, HCE conducts the majority of its energy audits in response to consumer complaints about high bills. HCE should reposition and market the program as an energy savings opportunity to those consumers with the highest savings potential and the means to invest in improvements. Specifically, during this initial planning period, HCE should target the program to all-electric consumers who own and occupy their own homes. All-electric consumers use 50 percent more electricity per meter than non-all-electric consumers, and targeting owner-occupied housing eliminates the challenge of split incentives between tenants and owners.

HCE should also expand its direct installation of complimentary compact fluorescent lights (CFLs) to include complimentary low-cost water-saving measures for consumers with electric water heaters as well as discounted programmable thermostats for those with electric or forced-air heating or cooling. The program should work in close concert with the emerging Energy Smart Program, taking advantage of that program's in-home energy assessments and data-sharing opportunities wherever possible. The program will offer a small set of cost-effective home weatherization incentives, and will additionally encourage consumers to take advantage of rebates available in the residential *Efficient Products Program*.

Efficient Products

This expansion of HCE's appliance rebate program seeks to achieve long-term energy savings through replacement of inefficient equipment and appliances, with an increased focus on residential lighting equipment. Targeted trade ally outreach, periodic retail buy-down of CFLs, and appliance recycling promotions will seek to increase the availability and marketing of efficient products in HCE's territory. Incentives will target HCE consumers' most significant energy savings opportunities in lighting and appliance end uses. Other specific measures include programmable thermostats, engine block heater timers, and heat tape system timers; heat tape timers are a relatively new DSM program measure that HCE can help to pilot and model for utilities in similar climates. The program's incentives will also enhance HCE's ability to persuade participants in the *Existing Homes Retrofit Program* to take action on recommendations received during home energy assessments.

Summary of Business Programs

Navigant's recommended non-residential DSM programs represent a significant expansion over HCE's existing C&I custom grants program. A set of straightforward prescriptive equipment rebates will help lower barriers to program participation for HCE's small business consumers. In addition, an increase in funding limits for the custom grant program will help attract large-scale, cost-effective efficiency investments from HCE's larger C&I accounts.

Business Prescriptive Incentives

This program offers a straightforward approach for commercial consumers who wish to take advantage of common energy savings opportunities. The program will create long-term energy savings by offering cash rebates for the replacement of inefficient lighting, HVAC, and other equipment with high-efficiency technologies that they would not have otherwise installed without the program. Incentives will initially target lighting, limited HVAC, and other end uses that have the highest energy savings potential within HCE's business sector, and will leverage trade ally education and training to help educate consumers about the potential life-cycle savings.

Large C&I Custom Incentives

This program expands and refocuses HCE's custom grants program for its largest commercial and industrial consumers.[4] Most importantly, HCE's previous grant limits (based on each consumer's annual usage) will be changed to an across-the-board $100,000 annual grant limit to any single account holder. HCE should continue to offer grants for technical services, though Navigant recommends these be contingent on the consumer implementing additional measures. In addition, incentives will be available for the installation of energy-saving measures based on forecasted reductions in energy usage (e.g., $/kilowatt-hour [kWh]). The grants will target some of the more specialized equipment and processes often in use at large, energy-intensive consumer sites (e.g., food service, HVAC, and variable-frequency drives [VFDs]). Incentives received under the *Business Prescriptive Incentives Program* will also count toward each consumer's annual total grant limit.

Program Goals and Metrics

Tables ES-4, ES-5, and ES-6 present each program's total energy savings and corresponding investment levels over the plan's five years, followed by the same metrics for each individual year. The first table also includes the overall and program-specific Total Resource Cost (TRC) test results and Lifetime Cost of Conserved Energy per kWh statistics.

Table ES-4. Portfolio Total Savings and Investment (2012-2016)

Program	Total Resource Cost (TRC) Test	Lifetime Cost of Conserved Energy ($/kWh)	Cumulative Total (2012-2016)		
			Annual Energy Savings (MWh)	Annual Coincident Demand Savings (MW)	Investment
Existing Home Retrofit	1.5	$0.02	6,745	0.96	$1,742,060
Efficient Products	2.3	$0.02	4,035	0.55	$613,546
Residential Subtotal	**1.7**	**$0.02**	**10,780**	**1.51**	**$2,355,606**
Prescriptive Incentives	2.1	$0.02	13,215	2.13	$2,343,085
Large C&I Custom	1.3	$0.03	7,511	0.96	$1,850,435
Business Subtotal	**1.8**	**$0.02**	**20,726**	**3.09**	**$4,193,520**
TOTAL	1.8	$0.02	31,506	4.60	$6,549,126
Contingency Budget					**$1,047,675**

Source: Navigant 2011

[4] Large C&I consumers are defined as those on rate schedules 63, 63s, 64, 66, 66s, 67, 67s, 68, and 69.

Table ES-5. Annual Savings and Total Investment (2012-2014)

Program	2012			2013			2014		
	Incremental Energy Savings (MWh)	Increm. Peak Demand Savings (MW)	Investment	Incremental Energy Savings (MWh)	Increm. Peak Demand Savings (MW)	Investment	Incremental Energy Savings (MWh)	Increm. Peak Demand Savings (MW)	Investment
Existing Home Retrofit	1,193	0.17	$272,112	1,457	0.21	$299,172	1,397	0.20	$381,934
Efficient Products	543	0.08	$91,998	586	0.08	$87,028	820	0.11	$130,873
Residential Subtotal	**1,735**	**0.25**	**$364,110**	**2,043**	**0.29**	**$386,200**	**2,217**	**0.31**	**$512,808**
Prescriptive Incentives	1,929	0.31	$388,101	2,558	0.42	$469,460	2,732	0.44	$481,010
Large C&I Custom	885	0.11	$250,257	1,328	0.17	$354,084	1,766	0.22	$409,683
Business Subtotal	**2,814**	**0.43**	**$638,358**	**3,885**	**0.59**	**$823,544**	**4,498**	**0.67**	**$890,693**
TOTAL	**4,550**	**0.68**	**$1,002,468**	**5,928**	**0.87**	**$1,209,744**	**6,715**	**0.97**	**$1,403,501**
Contingency Budget			**$304,150**			**$168,543**			**$156,559**

Note: Totals may include differences due to rounding.

Source: Navigant 2011

Table ES-6. Annual Savings and Total Investment (2015-2016)

Program	2015			2016		
	Incremental Energy Savings (MWh)	Incremental Peak Demand Savings (MW)	Investment	Incremental Energy Savings (MWh)	Incremental Peak Demand Savings (MW)	Investment
Existing Home Retrofit	1,350	0.19	$382,960	1,350	0.19	$405,881
Efficient Products	1,017	0.14	$148,909	1,068	0.14	$154,737
Residential Subtotal	**2,367**	**0.33**	**$531,870**	**2,418**	**0.33**	**$560,619**
Prescriptive Incentives	2,864	0.46	$490,731	3,132	0.50	$513,782
Large C&I Custom	1,766	0.22	$415,309	1,766	0.22	$421,103
Business Subtotal	**4,630**	**0.68**	**$906,040**	**4,898**	**0.73**	**$934,884**
TOTAL	6,997	1.01	$1,437,910	7,316	1.06	$1,495,503
Contingency Budget			**$199,151**			**$219,272**

Note: Totals may include differences due to rounding.

Source: Navigant 2011

Portfolio Implementation

Navigant recommends that HCE implement the proposed portfolio through a combination of in-house utility staff and third-party implementation contractors. HCE should issue up to three separate Requests for Proposals (RFPs) to qualified firms, each covering one of the work areas described in Table ES-7. Based on its knowledge of potentially qualified contractors, HCE may also consider bundling some of these work areas into a single RFP (e.g., combining #2 and #3). This approach would enable HCE to obtain more competitive, cost-effective, and qualified responses. It will also encourage proposing firms to form partnerships that can provide HCE an integrated team approach that will simplify collaboration and reduce HCE's administrative costs.

Table ES-7. Recommended Implementation Contractor RFP Components

RFP Component	Work Areas	Scope of Work
#1	Data Management System	Design and implement a DSM program tracking and data management system.
#2	Trade Ally Outreach	Conduct contractor orientations and pre-qualification; coordinate with distributors and retailers to ensure availability of incentivized equipment; arrange promotions and cooperative advertising.
#3	Marketing Communications	Design and prepare DSM program marketing materials.

Source: Navigant 2011

Navigant considers these three components as necessary steps to take in advance of the rollout of any changes in HCE's current DSM program offerings. Navigant anticipates that—even with an aggressive approach—it will take three to four months for HCE to prepare the RFPs, evaluate and select contractors, and for all requisite work to be completed prior to programs launching. In order to position the new program offerings as a comprehensive approach and to maximize awareness generated, HCE should aim to launch each sector's programs simultaneously.

In addition, Navigant recommends that HCE hire an additional full-time employee whose time can be partially allocated to the significant expansion of the commercial DSM programs. Targeted participation levels in the *Business Prescriptive Incentives* and *Large C&I Custom Programs* will rely on HCE having a dedicated account representative to market programs to members on an ongoing basis. This individual's responsibilities will benefit other parts of utility operations as the individual builds strong relationships with HCE's largest consumers.

Measurement and Evaluation

Timing of evaluation, measurement, and verification (EM&V) activities and reporting can have a significant effect on the accuracy and usefulness of findings. Data collection done months or years after a program intervention can be weakened by fading memories, lost data, and confounding events that have happened in the intervening time. EM&V reports that come well after program intervention can arrive too late to provide input at key program implementation stages.

EM&V plans are designed to mitigate these problems. EM&V plans integrate select data collection within the program implementation process and provide near real-time feedback on key indicators of program progress. EM&V processes that take an "integrated data collection" approach to planning seek out

opportunities in the program implementation process where evaluation data can be collected efficiently, cost-effectively, accurately, and produce timely results.

Such integrated approaches inform several types of EM&V studies. Navigant recommends that HCE focus its evaluation resources on impact evaluation. This approach will enable HCE to validate program assumptions about measure savings and cost-effectiveness. It also enables HCE and its implementation partners to assess the need to adjust rebates. These inputs can help HCE adjust its savings targets or cost-effectiveness screens. In addition, the impact evaluations validate the work of implementation contractors whose compensation may be partially based on the achievement of energy savings. These efforts to ensure appropriate use of member funds should be prioritized.

Process and market studies also provide useful information for program implementers and may be considered if the portfolio fails to meet its energy savings targets. The information about the priorities and decision-making processes for the target market that market studies provide can help re-direct marketing efforts or incentive levels. Process evaluations can identify any processes or strategies that the program uses that may create high barriers to participation. Both of these types of information can inform adjustments to implementation plans as needed.

HCE should work with an evaluation contractor to develop appropriate M&V plans.

The key components of the process and impact evaluations include the following:

» Evaluations conducted by an independent, DSM evaluation consultant obtained through an RFP process

» Verification, by an appropriate sample, that efficiency measures are installed as expected

» In-field measure performance measurement and data collection

» Energy and demand savings analysis to compute the results that are being achieved

» Cost-effectiveness analysis by program and overall DSM portfolio

» Identification of important opportunities for improvement

Given the budget levels available for evaluation, HCE should carefully consider the prioritization of measures and the balance between on-site data collection and engineering analysis.

Program and Portfolio Risk

Any DSM modeling effort and resulting energy efficiency plan are subject to overarching risks associated with changing political, economic, and implementation phase circumstances. These factors can affect realized energy savings or cost-effectiveness. To minimize the potential effects of these risks on HCE's DSM portfolio, Navigant has employed the following strategies in designing HCE's programs.

» Recommending a broad portfolio of programs across HCE's consumer base
» Drawing upon "tried and true" programs that other utilities across the country have previously proven successful
» Where appropriate, recommending that HCE hire program implementation contractors with significant experience in implementing similar energy efficiency programs in Colorado and other regions

» Including a robust set of program evaluation recommendations, including the implementation of a program tracking and data management system, to enable real-time and ongoing feedback on program progress and to allow any needed fine-tuning to occur as soon as possible.

The continued application of these key strategies in planning and implementation initiatives will help to ensure continued success.

2 Introduction

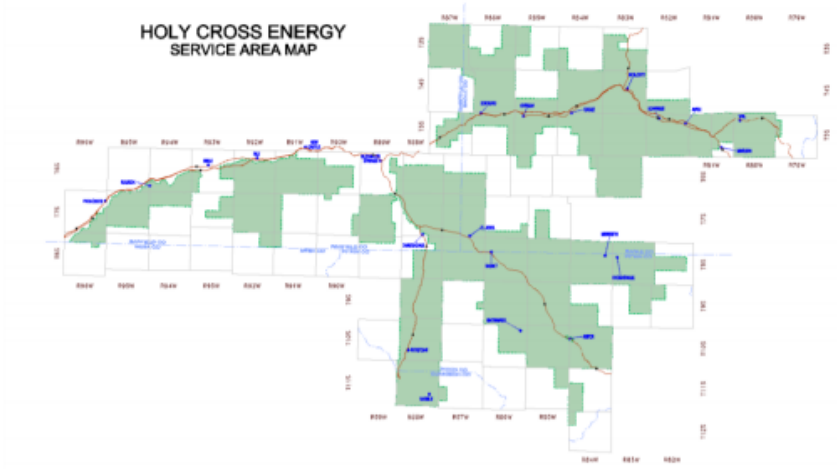
In the next five years, Holy Cross Energy (HCE) and its members will pursue actions to achieve a leadership role in energy efficiency (EE) among peer organizations. This current planning effort responds to priorities identified in the 2009 member survey, in which HCE members indicated continued support for energy efficiency and renewable energy programs and goals.[5] HCE continues to look for new ways to empower its members and staff to take meaningful, cost-effective steps toward securing a reliable and cost-effective base of resources to meet its energy needs. This effort builds on six years of education and incentives through HCE's *With Efficiency, Conservation and Renewable Energy (WE CARE) Program*.

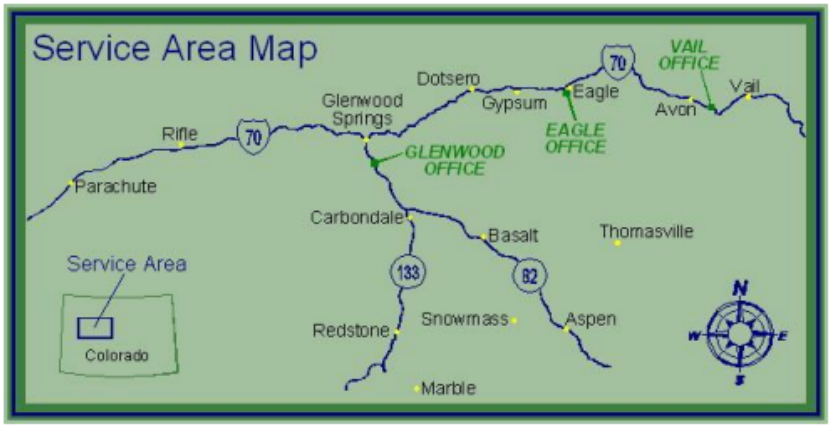
This five-year plan seeks to address HCE's commitment to achieving deeper energy savings through a portfolio of Demand Side Management (DSM) programs. The programs outlined in this plan build upon HCE's existing *WE CARE* efforts, combining industry benchmarks and best practices with analysis of HCE consumer- and market-specific data. HCE serves approximately 55,000 accounts in five counties in western Colorado: Eagle, Garfield, Gunnison, Mesa, and Pitkin (Figure 2-A), with consumers comprising a diversity of home types, business sectors, and unique seasonal energy use patterns.

Navigant used this data, along with conversations with local stakeholders and energy industry trade allies, to recommend a DSM portfolio that offers energy savings opportunities across HCE's consumer base. In the spirit of collaboration and collective best interest, several recommended implementation strategies—including focused outreach and cooperative marketing with local businesses and contractors—give consumers the opportunity to support other HCE member-owners in the pursuit of personal energy savings. In addition, this plan recommends robust measurement and verification strategies that deepen HCE's commitment to evaluating and continually improving its efforts. The result is a practical roadmap for setting and achieving EE goals as well as helps HCE's commitment to providing consumers cost-effective carbon emission reduction opportunities.

[5] GDS Associates, 2009, *2009 Member Survey: Attitudes on Carbon Emissions Reductions, Renewable Energy Resources and Smart Grid Technology*, Holy Cross Energy. Available: http://www.holycross.com/member-services/2009survey

Figure 2-A. Holy Cross Energy Service Territory





Source: Holy Cross Energy Website

3 Report Organization

The remainder of HCE's Five-Year Plan for Energy Efficiency is divided into the following sections:

- **Section 3: Portfolio Development** provides an overview of energy efficiency goals and objectives, planning process, inputs and assumptions used in estimating energy savings, and considerations for risk management in implementing a DSM portfolio.
- **Section 4: Program Portfolio Summary** provides a high-level overview of each of HCE's DSM programs, investment allocations, and benefit-cost results.
- **Section 5: Residential Program Descriptions** presents specific program plans for HCE's residential programs.
- **Section 6: Business Program Descriptions** presents specific program plans for HCE's business programs.
- **Section 7: Implementation Considerations** presents an overview of HCE's recommended approach to delivering its programs through a combination of in-house staff resources and third-party implementation contractors, as well as a portfolio-level implementation timeline.
- **Section 8: Portfolio Management Considerations** provides an overview of portfolio management strategies including marketing and outreach, tracking and reporting, midstream adjustments to approach, and coordination with other entities.
- **Section 9: Evaluation, Measurement, and Verification (EM&V)** provides a comprehensive overview of the types, extent, and timing of EM&V activities that would be included in a robust EM&V plan to ensure programs are achieving intended goals with the minimum program expenditures.
- **Section 10: Other DSM Programs Considered** discusses specific programs that were considered, but ultimately not included in this plan.

Appendix A: Benefit-Cost Methodology provides information about the assumptions Navigant used in its benefit-cost tests.

4 Portfolio Development

Since 2004, HCE has offered consumers various incentives and programs for renewable energy and energy efficiency. The WE CARE program served as the main vehicle for these efforts, part of HCE's commitment to offset carbon dioxide emissions from fossil-fuel-generated electricity. On the residential side, WE CARE has included residential programs such as home energy audits, appliance recycling and rebates, and a compact fluorescent lighting (CFL) campaign. On the commercial and industrial (C&I) side, WE CARE has provided custom grants to help consumers identify and implement energy efficiency and conservations measures.

Over the past two years, HCE has continued to gather additional information and insight to help elevate the role these programs can play in reducing carbon and helping members better manage their energy use. In January 2010, HCE reported the results of its 2009 Member Survey to better understand consumers' attitudes on carbon emissions reductions and their willingness to support enhanced programs to help achieve associated goals.[6] A few months later, it published a series of reports that included a DSM potential study characterizing the type and scale of energy savings opportunities that exist in its service territory.[7] In late 2010, HCE contracted Navigant Consulting, Inc. (Navigant) to recommend a portfolio of enhanced DSM programs that would prioritize and package these potential opportunities based on their ability to cost-effectively meet energy savings goals.

4.1 Goals and Objectives of the Five-Year Planning Process

The high-level goals that HCE outlined for this five-year planning process for energy efficiency include the following:

- Provide HCE consumers with a variety of options to manage their electricity energy usage.
- Identify incremental reduction targets for projected HCE energy and demand growth.
- Establish budgets associated with the implementation of the Five-Year Plan and projected EE savings.
- Identify opportunities for collaboration with other local and regional energy efficiency programs and entities.
- Create a culture of awareness through education, marketing, and public outreach.
- Maximize program savings at a minimum cost by striving to achieve comprehensive cost-effective savings opportunities.

---

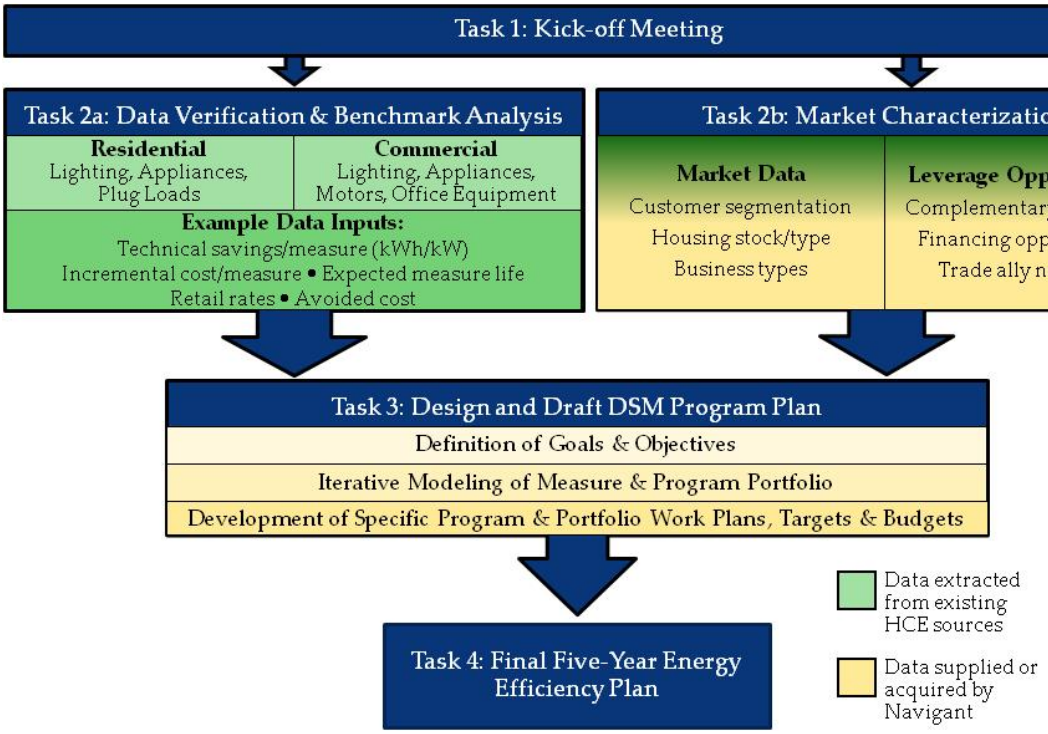
[6] GDS Associates, 2009, *2009 Member Survey: Attitudes on Carbon Emissions Reductions, Renewable Energy Resources and Smart Grid Technology,* Holy Cross Energy. Available: http://www.holycross.com/member-services/2009survey

[7] Nexant, 2010, *System Wide Electric Energy Efficiency Potential Study – Volume I.* Holy Cross Energy. Available: http://www.holycross.com/UserFiles/File/eerfp-Holy_Cross_Energy_Potential_Study_Volume_I.pdf

4.2 *Portfolio Planning Process*

Navigant used a data-driven approach to DSM program planning that drew upon primary and secondary data sources. These sources combine industry best practices and benchmarks with HCE's specific energy savings opportunities and market characteristics. Drawing on its extensive DSM program evaluation and planning experience and with the help of its proprietary DSM Portfolio Planning Model, Navigant's team synthesized this data to generate realistic program goals and budgets. By basing projections on hard data and quantifiable assumptions as much as possible, the plan provides for more effective measurement and evaluation strategies that HCE can use to make midstream adjustments based on updated participation rates and changing market characteristics.

Figure 4-A. Navigant DSM Program Portfolio Process



Source: Navigant 2011

Figure 4-A summarizes Navigant's planning approach. An initial kick-off meeting with HCE staff helped establish the availability of existing data sources, overarching goals and objectives, and the parameters within which the DSM programs must operate. The second major task included the incorporation of HCE's recent DSM potential study results and other economic assumptions into Navigant's program optimization model; it also included a review of industry benchmarks and best practices for cost-effective DSM program design and implementation. In addition, the team characterized HCE consumer energy usage, housing, and business types, and opportunities to leverage complementary energy efficiency programs and trade ally networks (e.g., non-profits and local electric and heating, ventilating, and air conditioning [HVAC] contractors).

Based on its Task 2 findings, Navigant shared preliminary program recommendations and solicited feedback from HCE's Energy Efficiency Task Force. Navigant incorporated this feedback in the subsequent iterative modeling process, wherein it defined energy savings goals and budgets for each DSM program using modeling software. The output of this analysis and the subsequent program design

recommendations culminated in a Draft Five-Year Plan for Energy Efficiency (Draft Plan). Upon reviewing the Draft Plan, HCE's staff and Board of Directors provided additional direction on the portfolio's ultimate design. Specifically, HCE and its Board requested a reduction in the draft DSM portfolio budget and a reallocation of funds toward the plan's commercial sector programs.

Table 4-A outlines the Board's requested budget allocations for the Final Five-Year Plan for Energy Efficiency (Final Plan). Per the Board's direction, 60 percent of annual WE CARE Program funding will be reserved for the EE Portfolio. Two-thirds of that EE Portfolio funding will be allocated to commercial consumers, with the remaining one-third allocated to residential consumers. In addition, the residential allocation includes a budget set-aside for two cost-sharing programs that fall outside of the EE Portfolio's scope. HCE intends to lend support to the existing *Tri-County Energy Smart Program* and the *Low Income Weatherization Program* overseen by the Northwest Colorado Council of Governments (NWCCOG).[8]

Table 4-A. Budget Allocations for EE Portfolio Programs

	2012	2013	2014	2015	2016	2012-2016
Baseline EE Portfolio Budget (60% of Annual WE CARE Budget)	**$1,406,618**	**$1,478,287**	**$1,560,060**	**$1,637,061**	**$1,714,775**	**$7,796,801**
Commercial EE Programs Budget for Five-Year Plan (67% of EE Portfolio Budget)	**$942,434**	**$990,452**	**$1,045,240**	**$1,096,831**	**$1,148,900**	**$5,223,857**
Residential EE Programs Budget (33% of EE Portfolio Budget)	$464,184	$487,835	$514,820	$540,230	$565,876	$2,572,944
Energy Smart and Low-Income Weatherization Program Contributions*	$100,000	$100,000				
Residential EE Programs Budget for Five-Year Plan	**$364,184**	**$387,835**	**$514,820**	**$540,230**	**$565,876**	**$2,572,944**

Note: Assumes $50,000 each is contributed annually in 2012 and 2013 to the Energy Smart Program and Low-Income Weatherization Program.

Source: Navigant 2011

These Board-specified budget allocations and limits necessitated a top-down approach to determining annual energy savings goals, as discussed further in Section 5.1.

4.3 Energy Savings Assumptions

To assess energy savings for electricity measures and related programs, Navigant relied on the measure-specific impacts and cost data from HCE's existing DSM potential study. This earlier study indicated that the measure data generally accounts for HCE's weather and building code requirements, energy usage patterns, and building characteristics.[9]

[8] The cost-sharing nature of these two programs made it too difficult to accurately model energy savings that would be attributable to HCE using the DSM Portfolio Planning Model.

[9] Nexant, 2010, *System Wide Electric Energy Efficiency Potential Study – Volume I.* Holy Cross Energy. Available: http://www.holycross.com/UserFiles/File/eerfp-Holy_Cross_Energy_Potential_Study_Volume_I.pdf

Navigant's modeling team reviewed all measure data and model inputs from the earlier potential study and discussed irregularities and concerns with HCE. Navigant made a number of modifications to the existing data that included the following:

- Updating peak demand coincidence factors for each measure category using data from another winter-peaking load profile utility.[10] The coincidence factors in HCE's DSM Potential Study did not adequately account for HCE's winter peak demand profile.
- Collecting data and creating two new measures to evaluate the potential energy savings and cost-effectiveness for engine block heater timers[11] and heat tape timers[12] for HCE's residential DSM programs. These less common measures were not included in the original DSM Potential Study.
- Decreasing the assumptions for energy savings and measure lifetime for lighting equipment measures to match current industry data. The adjustments were important given the recommended programs' focus on lighting equipment retrofits in the plan's initial years.
- Updating the ENERGY SMART clothes washer data to match current market conditions. The DSM Potential Study used an incremental cost of $60; however, other current sources reported incremental costs of $140.

Navigant bases its assumptions regarding measure energy savings, incremental costs, and measure lifetimes on currently available information and expected adjustments to equipment standards. Any future updates to this plan and model will need to account for any future changes in costs and regulations that might affect estimated costs and energy savings.

4.4 Portfolio Risk Management Considerations

Any DSM modeling effort and resulting energy efficiency plan are subject to overarching risks associated with changing political, economic, and implementation phase circumstances. These factors can affect realized energy savings or cost-effectiveness. To minimize the potential effects of these risks on HCE's DSM portfolio, Navigant has employed the following strategies in designing HCE's programs.

» Recommending a broad portfolio of programs across HCE's consumer base
» Drawing upon "tried and true" programs that other utilities across the country have previously proven successful
» Where appropriate, recommending that HCE hire program implementation contractors with significant experience in implementing similar energy efficiency programs in Colorado and other regions
» Including a robust set of program evaluation recommendations, including the implementation of an information management system, to enable real-time and ongoing feedback on program progress and to allow any needed fine-tuning to occur as soon as possible

The continued application of these key strategies in planning and implementation initiatives will help to ensure continued success.

---

[10] Ontario Power Authority. "2010 Prescriptive Measures and Assumptions List." Online technical resource manual. Accessed January 26, 2011. (http://www.powerauthority.on.ca/evaluation-measurement-and-verification/measures-assumptions-lists).

[11] Ibid.

[12] Heat tape timer data was compiled from interviews with HCE staff, local trade allies, and equipment manufacturers.

5 Program Portfolio Summary

This section provides an overview of HCE's recommended DSM programs, beginning with an explanation of the portfolio's energy savings and investment goals. This is followed by a brief overview of the recommended programs, projected energy savings and budget metrics for each program, and associated benefit-cost test results.

5.1 Energy Efficiency Portfolio Goals

Using HCE's revised portfolio budget guidelines, Navigant developed energy-saving goals based on DSM program results and best practices from 62 municipal and cooperative utilities across the country.[13] Table 5-A outlines the plan's resulting energy savings and investment targets. The first-year energy savings target of 0.45 percent of forecasted sales represents an aggressive, but achievable goal for HCE. Subsequent annual targets increase rapidly as staff, trade ally, and member activities gain momentum and increased efficiencies.

HCE's planned investment targets also draw upon demonstrated industry best practices. Annual program budgets of *best practice organizations* are generally a factor of 2.0-2.5 times energy savings (as a percent of prior-year sales). For example, achieving 0.5 percent energy savings requires a budget between 1.0 percent and 1.25 percent of sales. These budgets account for utility administration and program implementation activities, consumer incentives, marketing and outreach, and measurement and evaluation. In the earlier years of program implementation, utilities may require slightly higher budgets to account for start-up costs.

Table 5-A. HCE Savings Goals and Planned Investments (2012-2016)

	2012	2013	2014	2015	2016
Incremental Energy Savings Goal as % of Sales	0.45%	0.51%	0.55%	0.55%	0.55%
Planned Investment as % of Revenues	1.11%	1.12%	1.20%	1.20%	1.20%

Source: Navigant 2011

In setting these goals, Navigant accounted for HCE's particular market challenges and opportunities, as well as the changing landscape of energy efficiency technologies and standards. Improved lighting and equipment standards, as well as increasing saturations of ENERGY STAR appliances, continue to raise baseline efficiency values, making it more difficult for utilities to access the "low-hanging fruit" energy savings available just a few years ago.

As shown in Table 5-B, the median annual energy savings achieved by benchmarked municipal and cooperative utilities was 0.30 percent in 2007, with "best practices" among these utilities achieving 0.50 percent. The overall and best practices medians for investor-owned utilities (IOUs) were 0.9 percent and 1.1 percent, respectively. Municipal and cooperative utilities typically achieve one-third of their IOU or state agency counterparts' savings rates; however, top performers can achieve savings comparable to best

[13] Agapay, L. and R. Gunn. Summit Blue Consulting, 2010, "*Energy Efficiency Resource Standards for IOUs, Municipal, and Cooperative Utilities: Can One Size Fit All?"* American Council for an Energy-Efficient Economy(ACEEE) 5th National Conference on Energy Efficiency as a Resource.

practice IOU savings. Based on conversations with HCE staff and its Energy Efficiency Task Force, the team agreed that HCE's goals should position it near the forefront of its cooperative utility peers.

Table 5-B. 2007 DSM Program Energy Savings Benchmarks

Utility Type	Energy Savings as % of Sales		First-Year Cost of Energy Savings ($/kWh)	
	Median of All	Median of Best Practices	Median of All	Median of Best Practices
IOUs and Agencies	0.9%	1.1%	$0.15	$0.11
Munis & Coops	0.3%	0.5%	$0.33	$0.14

Note: Cost of first-year savings should not be confused with a levelized cost of conserved energy.

Source: Navigant 2011

5.2 *Projected Energy Savings and Investment Levels*

Table 5-C shows forecasted portfolio-wide energy savings and spending based on Navigant's DSM Portfolio Planning Model outputs using the goals from Table 5-A. Navigant proposes that HCE budget a total of $7.8 million in energy efficiency programs over the next five years, targeting cumulative annual energy savings of 2.47 percent against 2016 sales forecasts.

Table 5-C. Investment and Energy Savings Compared to Targets (2012-2016)

Investment	2012	2013	2014	2015	2016	Total
Spending Target as % of Revenue	1.11%	1.12%	1.20%	1.20%	1.20%	1.20%
Spending Target ($)	$1,306,618	$1,378,287	$1,560,060	$1,637,061	$1,714,775	$7,596,801
Planned Investment ($)	$1,002,468	$1,209,744	$1,403,501	$1,437,910	$1,495,503	$6,549,126
% of Spending Target	77%	88%	90%	88%	87%	84%
Contingency Budget ($)	$304,150	$168,543	$156,559	$199,151	$219,272	$1,047,675
Savings	**2012**	**2013**	**2014**	**2015**	**2016**	**Cumulative***
Incremental Savings Goal as % of Forecasted Sales	0.45%	0.51%	0.55%	0.55%	0.55%	2.47%
Incremental Savings Goal (MWh)	5,392	6,299	6,941	7,106	7,301	33,039
Planned Incremental Savings	4,550	5,928	6,715	6,997	7,316	31,506
Planned Incremental Savings as % of Forecasted Sales	0.38%	0.85%	1.35%	1.86%	2.35%	2.35%
% of Savings Goal	84%	94%	97%	98%	100%	95%

Note: Spending target excludes $100,000 budget set aside in 2012 and 2013 for the *Energy Smart* and *Low Income Weatherization Programs*. "Cumulative" values in the last column refer to annual energy savings planned by 2016. "Incremental" savings values represent new savings achieved each year.

Source: Navigant 2011

Table 5-C illustrates that HCE can likely meet these energy savings goals at or below proposed annual spending benchmarks, with 95 percent of targeted cumulative annual energy savings achieved using only 84 percent of forecasted budgets (about $6.55 million). **This equates to 2.35 percent savings against forecasted 2016 energy usage.** It also reveals the relatively conservative approach used to forecast program participation in the first year, with only 84% of the targeted savings achieved in the DSM Portfolio Planning Model. This shortfall primarily results from HCE using a low (but reasonable) assumption for the per-project energy savings provided by its *Large C&I Custom Grants Program*. This resulted in an annual contingency budget that will allow HCE flexibility to shift resources as programs ramp up and participation trends evolve. With targeted marketing of that program to large C&I consumers with the highest electricity usage, Navigant anticipates that per-project savings will be substantially higher than the modeled assumption. This would consume contingency funds through increased incentives and program administration costs, and would subsequently close the savings gap.

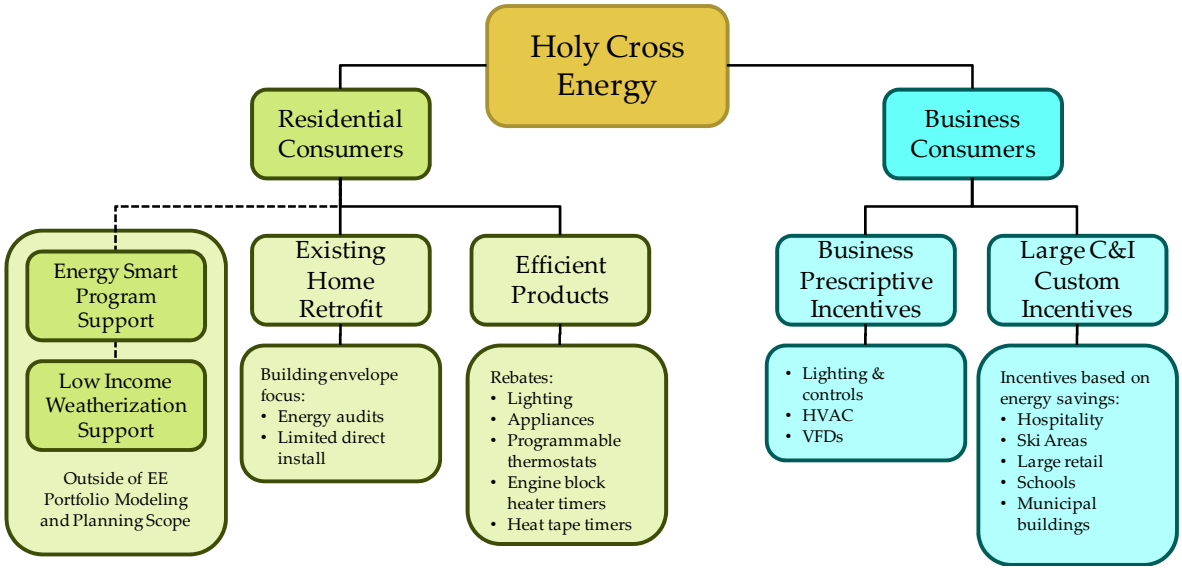
This plan presents *the anticipated levels of investment* over this five-year portfolio. HCE will need to modify projected program funding based on updated annual revenue forecasts and the associated percentage of revenue that can be applied to efficiency programs. As such, HCE should expect some adjustments in the forecasted investment levels. Additionally, HCE should review and modify incentive levels and other program elements on as often as an annual basis to reflect changes in market conditions or implementation processes in order to maximize cost-effective savings.

The plan seeks to maximize the amount of program funds that go directly to consumers through rebates and incentives, trade ally outreach training, and consumer education. However, it also takes into account the realities of program costs needed to adequately plan, develop, deliver, and evaluate quality DSM programs. Meeting these aggressive goals will require a significant effort by HCE to effectively allocate staff resources, develop targeted marketing strategies, and leverage networks of local partners and trade allies (e.g., municipalities, environmental organizations, trade contractors, and retailers).

5.3 Overview of Recommended Programs

Figure 5-A provides a graphic representation of HCE's Five-Year DSM program portfolio. Navigant recommends HCE offer two residential programs and two business programs to achieve its energy savings goals most cost-effectively. As previously mentioned, HCE requested that the residential programs include a budget set-aside in the first two years for two cost-sharing programs that fall outside of the DSM portfolio's scope. A high-level overview of programs for the residential and business sectors follows, while additional program design recommendations appear in Sections 6 and 7, respectively.

Figure 5-A. HCE Program Portfolio



Source: Navigant 2011

It is important to note that Navigant defines "programs" by each specific market and technology end-use type primarily for planning purposes and to present projected savings, costs, and cost-effectiveness. During implementation, HCE should consider the best ways to present the programs to its consumers in a more accessible manner. For example, the two residential programs might be marketed as the "Home Energy Assessment and Upgrade" and "Energy Efficient Product Rebates" programs, respectively.

5.3.1 Summary of Residential Programs

Navigant's recommended residential DSM programs build upon HCE's existing *WE CARE* program offerings and seek to leverage other energy efficiency programs and incentives at the regional and state level. HCE should offer these programs as a more unified residential program that seeks to help residents identify energy savings opportunities in their homes and to subsequently *take action* to reduce their energy use.

5.3.1.1 Existing Home Retrofit

This expansion and refocusing of HCE's home energy audit program will aggressively target cost-effective residential energy-saving measures, with a focus on converting home energy assessments to homeowner action through education and incentives. Currently, HCE conducts the majority of its energy audits in response to consumer complaints about high bills. HCE should reposition and market the program as an energy savings opportunity to those consumers with the highest savings potential and the means to invest in improvements. Specifically, during this initial planning period, HCE should target the program to all-electric consumers who own and occupy their own homes. All-electric consumers use 50 percent more electricity per meter than non-all-electric consumers, and targeting owner-occupied housing eliminates the challenge of split incentives between tenants and owners.

HCE should also expand its direct installation of complimentary CFLs to include complimentary low-cost water-saving measures for consumers with electric water heaters as well as discounted programmable thermostats for those with electric or forced-air heating or cooling. The program should work in close concert with the emerging Energy Smart Program, taking advantage of that program's in-home energy

assessments and data-sharing opportunities wherever possible. The program will offer a small set of cost-effective home weatherization incentives, and will additionally encourage consumers to take advantage of rebates available through the residential *Efficient Products Program*.

5.3.1.2 Efficient Products

This expansion of HCE's appliance rebate program seeks to achieve long-term energy savings through replacement of inefficient equipment and appliances, with an increased focus on residential lighting equipment. Targeted trade ally outreach, periodic retail buy-down of CFLs, and appliance recycling promotions will seek to increase the availability and marketing of efficient products in HCE's territory. Incentives will target HCE consumers' most significant energy savings opportunities in lighting and appliance end uses. Other specific measures include programmable thermostats, engine block heater timers, and heat tape system timers; heat tape timers are a relatively new DSM program measure that HCE can help to pilot and model for utilities in similar climates. The program's incentives will also enhance HCE's ability to persuade participants in the *Existing Homes Retrofit Program* to take action on recommendations received during home energy assessments.

5.3.2 Summary of Business Programs

Navigant's recommended non-residential DSM programs represent a significant expansion over HCE's existing C&I custom grants program. A set of straightforward prescriptive equipment rebates will help lower barriers to program participation for HCE's small business consumers. In addition, an increase in funding limits for the custom grant program will help attract large-scale, cost-effective efficiency investments from HCE's larger C&I accounts.

5.3.2.1 Business Prescriptive Incentives

This program offers a straightforward approach for commercial consumers who wish to take advantage of common energy savings opportunities. The program will create long-term energy savings by offering cash rebates for the replacement of inefficient lighting, HVAC, and other equipment with high-efficiency technologies that they would not have otherwise installed without the program. Incentives will initially target lighting, limited HVAC, and other end uses that have the highest energy savings potential within HCE's business sector, and will leverage trade ally education and training to help educate consumers about the potential life-cycle savings.

5.3.2.2 Large C&I Custom Incentives

This program expands and refocuses HCE's custom grants program for its largest commercial and industrial consumers.[14] Most importantly, HCE's previous grant limits (based on each consumer's annual usage) will be changed to an across-the-board $100,000 annual grant limit to any single account holder. HCE will continue to offer grants for technical services (e.g., audits), though Navigant recommends that these payments be contingent on the consumer implementing additional measures. In addition, incentives will be available for the installation of energy-saving measures based on forecasted reductions in energy usage (e.g., $/kilowatt-hour [kWh]). The grants will target some of the more specialized equipment and processes often in use at large, energy-intensive consumer sites (e.g., food service, HVAC, and variable-frequency drives [VFDs]). Incentives received under the *Business Prescriptive Incentives Program* will also count toward each consumer's annual total grant limit.

[14] Large C&I consumers are defined as those on rate schedules 63, 63s, 64, 66, 66s, 67, 67s, 68, and 69.

5.4 *Projected Performance Metrics by Program*

Overall, as summarized in Table 5-D, Navigant recommends HCE budget a total of $7.8 million over the five-year portfolio period. Based on direction from HCE's Board of Directors, Navigant allocated energy savings and investment targets in a 67/33 ratio between commercial and residential programs. This represents a substantial expansion of HCE's DSM efforts in both sectors.

Table 5-D. Portfolio Total Energy Savings and Investment (2012-2016)

Program	Total Resource Cost (TRC) Test	Lifetime Cost of Conserved Energy ($/kWh)	Cumulative Total (2012-2016)		
			Annual Energy Savings (MWh)	Annual Coincident Demand Savings (MW)	Investment
Existing Home Retrofit	1.5	$0.02	6,745	0.96	$1,742,060
Efficient Products	2.3	$0.02	4,035	0.55	$613,546
Residential Subtotal	**1.7**	**$0.02**	**10,780**	**1.51**	**$2,355,606**
Business Prescriptive	2.1	$0.02	13,215	2.13	$2,343,085
Large C&I Custom	1.3	$0.03	7,511	0.96	$1,850,435
Business Subtotal	**1.8**	**$0.02**	**20,726**	**3.09**	**$4,193,520**
TOTAL	1.8	$0.02	31,506	4.60	$6,549,126
Contingency Budget					**$1,047,675**

Note: Investment excludes $100,000 budget set aside in 2012 and 2013 for the *Energy Smart* and *Low Income Weatherization Programs*. Cumulative values refer to annual energy and demand savings planned by the end of 2016.

Source: Navigant 2011

The specific budgets presented for each recommended program in Sections 6 and 7 summarize the amounts allocated to each category of spending. Program delivery and utility administration budgets reflect anticipated full-time equivalent (FTE) staffing recommendations for each program, including both internal utility staff and external contractors. Navigant makes specific recommendations for HCE to consider hiring additional staff to support the commercial programs (in 2013) and an expansion of the *Existing Home Retrofits Program* (in 2014).

In addition, Navigant has recommended HCE acquire a Data Management System to enhance the cost-effectiveness of its program implementation activities. Such a system would enable HCE to track DSM program participation, record consumer energy assessment results and appliance characterization data, and assist in program evaluation activities. This system will enable HCE to substantially leverage its limited marketing and EM&V budgets. For example, by combining this information with consumer billing and other market data (e.g., demographic and geographic analysis), HCE can greatly improve its ability to undertake highly targeted marketing efforts and evaluate program results on a real-time, ongoing basis. Navigant has proportionally distributed estimated annual costs for this system across each of the four programs as part of their utility administration budgets.

A more in-depth accounting of program investments, including annual estimates, can be found in the following tables (Table 5-E and Table 5-F).

Table 5-E. Annual Energy Savings and Investment by Year (2012-2014)

Program	2012			2013			2014		
	Incremental Energy Savings (MWh)	Increm. Peak Demand Savings (MW)	Investment	Incremental Energy Savings (MWh)	Increm. Peak Demand Savings (MW)	Investment	Incremental Energy Savings (MWh)	Increm. Peak Demand Savings (MW)	Investment
Existing Home Retrofit	1,193	0.17	$272,112	1,457	0.21	$299,172	1,397	0.20	$381,934
Efficient Products	543	0.08	$91,998	586	0.08	$87,028	820	0.11	$130,873
Residential Subtotal	**1,735**	**0.25**	**$364,110**	**2,043**	**0.29**	**$386,200**	**2,217**	**0.31**	**$512,808**
Business Prescriptive Incentives	1,929	0.31	$388,101	2,558	0.42	$469,460	2,732	0.44	$481,010
Large C&I Custom Incentives	885	0.11	$250,257	1,328	0.17	$354,084	1,766	0.22	$409,683
Business Subtotal	**2,814**	**0.43**	**$638,358**	**3,885**	**0.59**	**$823,544**	**4,498**	**0.67**	**$890,693**
TOTAL	**4,550**	**0.68**	**$1,002,468**	**5,928**	**0.87**	**$1,209,744**	**6,715**	**0.97**	**$1,403,501**
Contingency Budget			**$304,150**			**$168,543**			**$156,559**

Note: Totals may include differences due to rounding.

Source: Navigant 2011

Table 5-F. Annual Energy Savings and Investment by Year (2015-2016)

Program	2015			2016		
	Incremental Energy Savings (MWh)	Incremental Peak Demand Savings (MW)	Investment	Incremental Energy Savings (MWh)	Incremental Peak Demand Savings (MW)	Investment
Existing Home Retrofit	1,350	0.19	$382,960	1,350	0.19	$405,881
Efficient Products	1,017	0.14	$148,909	1,068	0.14	$154,737
Residential Subtotal	**2,367**	**0.33**	**$531,870**	**2,418**	**0.33**	**$560,619**
Prescriptive Incentives	2,864	0.46	$490,731	3,132	0.50	$513,782
Large C&I Custom	1,766	0.22	$415,309	1,766	0.22	$421,103
Business Subtotal	**4,630**	**0.68**	**$906,040**	**4,898**	**0.73**	**$934,884**
TOTAL	6,997	1.01	$1,437,910	7,316	1.06	$1,495,503
Contingency Budget			**$199,151**			**$219,272**

Note: Totals may include differences due to rounding.

Source: Navigant 2011

5.5 *Benefit-Cost Testing*

Navigant has estimated HCE's energy savings, costs, and gross benefits associated with each of the programs in the proposed DSM portfolio. Following a brief introduction to the various types of tests included in the DSM Portfolio Planning model, this section presents benefit-cost test results for the proposed five-year plan.

5.5.1 Background on Benefit-Cost Testing

As shown in Table 5-G, Navigant modeled four standard benefit-cost tests commonly utilized in the energy efficiency industry, each of which provides different perspectives on the pros and cons associated with various DSM measures and programs. While these "tests" provide helpful metrics for understanding the potential effects of different DSM efforts, they represent only one set of factors in choosing the appropriate mix of measures, programs, and budgets for a portfolio. Utilities must also consider the political, economic, and consumer characteristics of their specific market.

Table 5-G. Comparison of Benefit-Cost Tests

	Total Resource Cost Test	Utility System Resource Cost Test	Participant Cost Test	Rate Impact Measure Test
BENEFITS				
Reduction in Consumer's Utility Bill			X	
Incentive Paid by Utility/Program Administrator			X	
Any Tax Credit Received	X		X	
Avoided Supply Costs	X	X		X
Avoided Participant Costs	X		X	
Participant Payment to Utility (if any)		X		X
COSTS				
Utility Admin. Costs	X	X		X
Participant Costs	X		X	
Incentive Costs		X		
Lost Revenues				X

Source: Navigant 2011

The Total Resource Cost (**TRC) Test** is a test that measures the total net resource expenditures of a DSM program from the point of view of the utility and its ratepayers. Resource costs include changes in supply and participant costs. A DSM portfolio that passes this test (i.e., a ratio greater than 1) is viewed as beneficial to the utility and its consumers because the savings in electric costs outweigh the DSM costs incurred by the utility and its consumers.

The Utility System Resource Cost **(UCT) Test** measures the net benefits of a DSM program as a resource option based on the costs and benefits incurred by the utility (including incentive costs) and excluding any net costs incurred by the consumer participating in the efficiency program. The benefits are the

avoided supply costs of energy and demand, the reduction in transmission, distribution, generation and capacity valued at marginal costs for the periods when there is a load reduction. The costs are the program costs incurred by the utility, the incentives paid to the consumers, and the increased supply costs for the periods in which load is increased.

The **Participant Cost Test** illustrates the relative magnitude of net benefits that go to participants compared to net benefits achieved from other perspectives. While called a "participant" perspective, it is not necessarily a perspective indicating whether consumers participate. The implied discount rate can vary substantially between consumers. More importantly, many consumers do not even know what a present-value benefit-cost analysis is let alone feel confident in making decisions based on it. Consequently, a simple payback (years) net of rebate has been shown to provide further guidance on consumer participation. The benefits derived from this test reflect reductions in a consumer's bill and energy costs plus any incentives received from the utility or third parties, and any tax credit. Savings are based on gross revenues. Costs are based on out-of-pocket expenses from participating in a program, plus any increases in the consumer's utility bill(s).

The **Rate Impact Measure (RIM) Test** measures the change in utility energy rates resulting from changes in revenues and operating costs. The higher the RIM test, the less impact on increasing energy rates. While the RIM results provide a guide as to which programs and technologies have more impact on rates, generally it is not considered a pass/fail test. Instead, the amount of rate impact is usually considered at a policy level. The policy level decision is whether the entire portfolio's impact on rates is so detrimental that some net benefits have to be forgone.

Regardless of which perspective is used, a benefit-cost ratio equal to or greater than 1.0 indicates that a program is cost-effective from that perspective, with the exception of the Rate Impact Measure as noted above. Information about additional assumptions Navigant used in program benefit-cost tests appears in Appendix A: Benefit-Cost Methodology.

5.5.2 Benefit-Cost Test Results

As shown in Table 5-H, the five-year portfolio of programs passes the TRC test with a score of 1.8. As mentioned earlier, any score with a ratio of greater than 1.0 passes the TRC test because the total benefits are greater than the total costs.

Table 5-H. Summary of Programs' Benefit-Cost Test Results (2012-2016)

PROGRAM	Total Resource Cost Test	Utility Cost Resource Test	Participant Cost Test	Rate Impact Measure
Existing Home Retrofit	1.5	2.7	3.4	0.6
Efficient Products	2.3	3.0	6.4	0.6
Residential Portfolio Average	**1.7**	**2.7**	**3.9**	**0.6**
Business Prescriptive Incentives	2.1	3.2	3.2	0.8
Large C&I Custom Incentives	1.3	1.9	3.0	0.6
Business Portfolio Average	**1.8**	**2.6**	**3.1**	**0.7**
Total Portfolio	**1.8**	**2.7**	**3.4**	**0.7**

Source: Navigant 2011

The RIM test results warrant additional mention. As shown, the model projects some DSM programs to have greater possible effects on HCE's rates than others, while the total RIM for the portfolio falls at 0.7. As previously mentioned, the RIM is not considered a pass/fail test for either an individual program or portfolio, but is meant to provide a measure of each program's relative impact. Many, if not most, utilities' DSM portfolios have RIM tests below 1.0.

As with other aspects of its DSM portfolio, HCE should closely monitor and re-evaluate each program's cost-effectiveness on an ongoing basis. As programs scale up, HCE will be able to adjust its forecast participation and incentive levels, providing additional insight into likely program benefits and costs moving forward.

6 Residential Program Descriptions

Navigant designed HCE's DSM programs to provide all consumer segments with participation opportunities for electric efficiency savings. This includes residential and business consumers, the latter of which are discussed in Section 7. While this plan describes the various programs separately, HCE should consider simple and approachable ways to brand comprehensive efficiency solutions to its consumers.[15] This will enable consumers to find information and answers to address applicable energy savings opportunities in a straightforward and comprehensive manner.

Following review of the Draft Plan, HCE's Board of Directors requested that the Final Plan set aside $100,000 in each of its first two years to lend support to two existing energy efficiency programs. These programs—the *Energy Smart Program* and the NWCCOG's *Low Income Weatherization Program*—are not administered by HCE, but provide significant opportunities to achieve additional energy savings by leveraging existing efforts within its service territory. This plan includes neither recommendations nor energy savings forecasts for HCE's involvement with either of these programs.[16] Given that the two programs are already in their implementation phases, HCE should work directly with the respective program administrators to determine the most cost-effective use for HCE funding and support.

The remainder of this section provides specific program design elements that Navigant recommends for HCE's residential consumer sector. In addition, each program profile includes projected annual budgets, energy savings, and benefit-cost test results.

[15] One example to consider is the approach taken by the New York State Energy Research and Development Authority (NYSERDA). This approach, visible at www.nyserda.org, provides multiple ways for the target market to access information about their programs. For example, web visitors can click on the sector in which they'd like to implement energy efficiency (e.g., health care, commercial real estate). Alternatively, a visitor can click on the type of project that they plan to complete (e.g., existing building retrofit, new construction). This approach creates multiple points of entry to the same programs, facilitating access to a range of consumers.

[16] With these two programs already in varying stages of implementation, this plan's scope and timeline did not allow for the level of planning and coordination required to outline the role HCE's additional funding would play. In addition, cost sharing for jointly funded programs creates complex attribution issues around energy savings calculations that were beyond the scope of this project.

6.1 Existing Home Retrofit Program

Existing Home Retrofit Program	
Objectives	This program will focus on converting home energy assessments to homeowner action. Near-term energy savings will be achieved through enhanced direct install measures offered during in-home visits. The program will achieve long-term savings through weatherization incentives and consumer education efforts that seek to improve knowledge of current energy use and savings opportunities. Such education and awareness will also help encourage consumers to pursue additional measures and rebates through the *Efficient Products Program*. A secondary objective focuses on collecting consumer appliance and equipment saturation data through the home energy assessment process to better inform future planning efforts.
Rationale	The in-person consumer touch-point enabled by home energy assessments and direct install programs offers an opportunity to educate consumers about energy efficiency options specific to their homes and direct them to additional resources and other available incentives. HCE currently offers complimentary home energy assessments, but has achieved relatively low participation rates since 2004 (~4 percent of residential consumers). HCE reports that a majority of these assessments are requested by consumers to address high bill complaints rather than identifying energy savings measures. The *Existing Home Retrofit Program* will reposition and expand the marketing of these home energy assessments, offer complimentary and discounted direct install measures at the time of the assessment, and provide enhanced energy savings and payback information to enable consumers to make investment decisions about energy efficiency measures. The program has a substantial opportunity for cross-promotion with the *Energy Smart Program* in Eagle and Pitkin counties and the *Garfield Clean Energy Program*, both of which offer residential energy assessments, incentives, and financing for efficiency measures.

<table>
<tr><td rowspan="3">Target Market</td><td>Primary Target Market</td><td>Secondary Target Market</td></tr>
<tr><td>» All-electric consumers; older homes first
» Single-family, owner-occupied homes</td><td>» Seasonal and recreational homes
» Multi-family</td></tr>
<tr><td colspan="2">With past audits primarily requested by consumers in response to high bills, HCE should reposition and market the program as an energy savings opportunity to consumers with high savings potential and the means to invest in improvements. Specifically, HCE should target assessments to all-electric consumers who own and occupy their own homes. All-electric consumers use 50 percent more electricity per meter than non-all-electric consumers, and targeting owner-occupied housing eliminates the challenge of split incentives between tenants and owners.

Seasonal and recreational homes represent an additional 27 percent of housing in Eagle and Pitkin counties; and although energy savings may be limited by the reduced operating hours of energy-using equipment, this is a significant population within HCE's service territory. Multi-family housing will also qualify for walk-through assessments and direct install measures (e.g., CFLs and low-flow showerheads), but given the division between spending on more expensive improvements (by the owner) and realization of benefits (typically by the tenants), this group will remain secondary to single-family housing in targeted marketing efforts.</td></tr>
<tr><td rowspan="2">Products and Services Provided</td><td colspan="2">Complimentary Home Energy Assessments</td></tr>
<tr><td colspan="2">HCE should continue to provide complimentary walk-through home energy assessments with an increased consumer education focus. Specifically, HCE should consider adopting a more detailed home energy assessment software tool that includes basic energy savings and payback estimates. While this approach may add additional time to each assessment, the comprehensive approach will allow HCE staff to better inform consumers of their energy-saving opportunities and direct them to available incentives. In addition, the information and recommendations generated through the tool can be assimilated into HCE's proposed Data Management System to help improve future marketing and program evaluation efforts. Using a tool similar to that of the Eagle County-led Energy Smart Program would further enhance collaboration between the two programs in terms of program marketing, data collection and sharing, and evaluation activities.</td></tr>
</table>

Products and Services Provided (cont'd)	**Direct Install Measures During Assessment**	
	Consumers receiving home energy assessments will receive five complimentary CFLs installed at the time of the visit. Consumers with electric water heating will also receive complimentary water-saving measures (e.g., faucet aerators, low-flow showerheads). In addition to these complimentary direct install measures, consumers will have the opportunity to purchase and install discounted programmable thermostats and other lighting equipment (e.g., dimmable CFL bulbs). The energy assessor should assist the homeowner in programming the thermostat. To maximize cost-effectiveness, HCE should specifically target discounted thermostats only to consumers with electric or forced-air space heating and/or cooling systems.[17]	
	Rebates for Home Weatherization Measures	
	HCE can further encourage residential consumers to take action on home energy assessment recommendations by offering rebates for cost-effective home weatherization measures. Incentives will cover 30 percent of the incremental cost of attic, basement, and crawlspace insulation; duct insulation and sealing; and programmable thermostats. HCE should not require a home energy audit as a condition for receiving an incentive; however, it should take reasonable steps to verify both the pre-existing conditions and successful installation of measures for participating households. This can be accomplished through pre-installation site visits and requiring copies of receipts or contractor invoices with rebate applications.	
	Standard Bidding Form and List of Pre-Qualified Installation Contractors	
	Upon delivering consumers' recommended energy savings report, HCE should provide them with a list of pre-qualified installation contractors and a standardized bidding form for contractors to provide quotes on recommended efficiency measures. Providing a list of pre-qualified contractors helps mitigate the barrier of identifying and hiring a trustworthy contractor, which may otherwise hinder some consumers from taking action on the recommended energy-saving measures identified in the assessment. Consumers are free to choose an unlisted contractor if they prefer.	
Implementation Strategy	**Targeted Marketing**	HCE can use analysis of consumer energy usage data and housing characteristic and ownership information to specifically market the program to priority target consumers. This can include periods of targeting specific geographic areas to minimize vehicle miles traveled for scheduled assessments.
	Consumer Data Collection	The assessment provides an opportunity to collect energy usage, equipment saturation, and housing characteristic data for the proposed program tracking and data management system, which will aid in future program marketing and evaluation.

[17] HCE may continue to offer the programmable thermostat discount to other consumers, but should be aware that it will not likely provide cost-effective electricity savings.

Implementation Strategy (cont'd)	**Pre-qualified Vendors**	HCE should pre-qualify a network of vendors to bid upon and deliver weatherization and other retrofit program services to its consumers. This may occur in combination with similar efforts for the commercial programs. Pre-qualification can be limited to verification of required licenses, insurance, and attending any trainings or program orientations that HCE wishes to require. These vendors will provide services to consumers through separate arrangements with the homeowner.
	Administration	HCE staff will administer all program tasks, including: » Creating a standardized contractor bidding form to help consumers solicit quotes for recommended retrofits » Scheduling and conducting assessments » Hiring a Marketing and Communications Contractor to create program marketing materials » Overseeing program marketing » Handling questions and complaints from consumers » Maintaining program tracking and Data Management System The program will initially require a 1.0-FTE DSM budget allocation and a 0.30-FTE administrative budget allocation to conduct these program administration tasks. Navigant recommends adding an additional 0.5-FTE allocation for this program in 2014 based on expected increases in home assessment demand.[18]
Key External Resources	The *Existing Home Retrofit Program* will collaborate with several regional programs and entities to leverage existing efforts and resources, including: » ***Energy Smart Program***, the Energy Efficiency Conservation Block Grant (EECBG)-funded energy efficiency program in Eagle and Pitkin counties, and ***Garfield Clean Energy Program*** for assessments, financing, and outreach » **NWCCOG** for low-income weatherization services » **Regional clean energy advocacy groups** including Clean Energy Economy for the Region (CLEER), Community Office for Resource Efficiency (CORE), and Eagle Valley Alliance for Sustainability (EVAS) for education and outreach The program will also develop and rely on a **pre-qualified trade ally network** of residential contractors (e.g., lighting, HVAC, and other contractors) to conduct more in-depth energy assessments, measure installation, and weatherization services.	

[18] FTE allocations designate "full-time equivalent" staffing estimates. An FTE of 1.0 indicates one person-year worth of full-time work; however, the duties comprising that work can be divided among multiple individuals.

Marketing and Communications	The marketing and communications for the *Existing Homes Retrofit Program* may draw upon the following tactics: » Direct mail campaign and bill inserts (targeted by building type and geography) » Phone calls to targeted consumers (targeted by building type and geography) » Information on the HCE website » Public relations efforts, including placing local newspaper, radio, and neighborhood newsletter stories, as well as making marketing materials available to nonprofits and municipalities for distribution at community events » Co-marketing efforts with existing programs such as *Energy Smart* and the *Garfield Clean Energy Programs* » Collateral and point-of-sale materials available through local contractors and retailers The program should use a periodic direct mail campaign targeted to specific geographies and/or building/owner types using consumer data analysis similar to that recently piloted by HCE. Focusing on specific geographies has the benefit of reducing the distance staff travel between assessments. This direct mail campaign may be followed up by telemarketing phone calls to targeted consumers. In addition, the program should capitalize on relationships built through the business sector programs to promote the residential programs to employees of local businesses.
Program Implementation Schedule	
	Recommended program implementation timelines appear in Section 8.2.

Budget		2012	2013	2014	2015	2016	Total
	Incentives	$111,007	$135,201	$129,729	$125,175	$125,175	$626,286
	Program Delivery	$101,970	$105,029	$168,280	$173,328	$178,528	$727,136
	Program Marketing	$19,265	$26,015	$47,742	$47,870	$64,941	$205,832
	Utility Administration	$27,830	$19,920	$20,270	$20,631	$21,002	$109,653
	EM&V	$12,040	$13,007	$15,914	$15,957	$16,235	$73,154
	Total	**$272,112**	**$299,172**	**$381,934**	**$382,960**	**$405,881**	**$1,742,060**
Energy and Peak Demand Savings		**2012**	**2013**	**2014**	**2015**	**2016**	**Cumula-tive[19]**
	Incremental Energy Savings (MWh)	1,193	1,457	1,397	1,350	1,350	6,745
	Incremental Peak Demand Savings (MW)	0.17	0.21	0.20	0.19	0.19	0.96
Cost-Effectiveness		**2012**	**2013**	**2014**	**2015**	**2016**	**Total**
	Total Resource Cost Test	1.7	1.8	1.5	1.5	1.4	1.5
	Utility Cost Test	2.9	3.3	2.5	2.5	2.3	2.7
	Participant Cost Test	3.5	3.4	3.4	3.3	3.3	3.4
	Rate Impact Measure	0.6	0.6	0.6	0.6	0.6	0.6
Risk Factors	The main risk with an audit/direct install program arises from consumers that receive their assessment and accept the complimentary CFLs and other direct install measures without taking action on recommended retrofit measures. This program will seek to remove as many barriers to further action as possible by referring consumers to trustworthy contractors and tightly integrating the program with the *Efficient Products Program* and other incentive programs to reduce the first-cost barrier.						

[19] Cumulative values refer to annual energy and demand savings planned by the end of 2016. Annual savings values represent incremental savings achieved each year.

6.2 *Efficient Products Program*

<table>
<tr><th colspan="3">Residential Efficient Products Program</th></tr>
<tr><td>Objectives</td><td colspan="2">The objectives of the Efficient Products Program include: 1) achieving long-term energy savings through replacement of inefficient equipment, including early replacement supported by HCE's appliance recycling program, and 2) increasing the availability and marketing of efficient products through retailer and contractor outreach.</td></tr>
<tr><td>Rationale</td><td colspan="2">The most significant residential sector energy savings opportunities in HCE's service territory lie within the lighting, plug load, and appliance end uses. The Residential Efficient Products Program will address the first-cost barrier to increasing efficiencies in associated products by offering consumers incentives and education on life-cycle savings. The program will also enhance HCE's ability to persuade participants in the Existing Homes Retrofit Program to take action on recommendations received from the home energy assessment by offering financial incentives to offset measure costs. By offering outreach to electrical contractors, as well as education and special marketing and buy-down participation to retailers, the program will also increase the availability and promotion of efficient products in local retail stores. The program should also offer periodic refrigerator and freezer recycling promotions to encourage consumers to replace inefficient equipment before the end of its useful life.</td></tr>
<tr><td rowspan="3">Target Market</td><td>Primary Target Market</td><td>Secondary Target Market</td></tr>
<tr><td>» All-electric consumers
» Year-round, owner-occupied homes</td><td>» Renter-occupied single-family and multi-family housing
» Seasonal and recreational housing</td></tr>
<tr><td colspan="2">Marketing will initially focus on all-electric consumers; all-electric consumers use 50 percent more electricity per meter than non-all-electric consumers. Owner-occupied, year-round units do not face the split-incentive problem in which a tenant reaps the energy savings benefits paid for by the building owner. As implementing efficiency measures in renter-occupied housing is more labor-intensive and requires landlord interactions, the program will focus on major property management firms for economies of scale. With lower overall usage per appliance, owners of seasonal and recreational housing will remain eligible for appliance rebates, but will not be the focus of initial marketing efforts for this program.</td></tr>
</table>

Products and Services Provided	**ENERGY STAR Lighting Product Rebates**
	The program will offer both year-round mail-in rebates and periodic retail promotions for high efficiency light bulbs, fixtures, and other lighting products. Consumers will access rebate information through point-of-sale displays, the HCE website, and direct mail marketing campaigns. Through periodic buy-downs of CFLs and other lighting products at local retailers, HCE will agree to reimburse participating stores for discounting the cost of qualifying products by a specified per-unit dollar amount during special limited-term promotions. The retailer will provide HCE with an itemized report of units sold during the promotion to receive reimbursement. This strategy eliminates costs associated with processing individual rebate forms and payments, and can build goodwill between the program and participating retailers by driving consumers to their stores. Ideally, HCE should partner with municipal utilities in Aspen and Glenwood Springs to cost-share these promotional events.
	ENERGY STAR Appliance Rebates and Recycling Promotions
	The program should continue to offer year-round, mail-in rebates for ENERGY STAR appliances, such as refrigerators and freezers. Consumers will access rebate information through point-of-sale displays, the HCE website, and direct mail marketing campaigns. The program should also conduct periodic appliance recycling drives, providing additional incentives to encourage early replacement of inefficient refrigerators and freezers. If consumers purchase a new ENERGY STAR refrigerator or freezer *and* submit proof of recycling for their old model during the promotion, HCE can provide an additional rebate beyond its regular recycling and ENERGY STAR incentives. The plan recommends HCE discontinue offering incentives for the purchase of ENERGY STAR clothes washers and dishwashers.[20,21]
	Miscellaneous Equipment Rebates
	In addition to the more traditional lighting and appliance rebates, HCE should take advantage of additional measures, including some that are more unique to its climate

[20] Navigant found the incremental cost data for clothes washers in the HCE DSM Potential Study to be lower ($60) than assumptions found in other measure databases. Updating the measure's incremental cost to $140 (based on other published data) decreased the TRC to 0.4.

[21] Based on the DSM Portfolio Planning Model, ENERGY STAR Dishwashers had a TRC of 1.4. However, based on residential program budget limitations, Navigant recommends eliminating incentives for dishwashers in order to steer program funds toward the more cost-effective refrigerator and freezer incentives. If HCE continues to offer dishwasher incentives, it will have a negative impact on the program's modeled TRC.

	and service territory. For example, Navigant recommends that HCE offer year-round mail-in rebates for engine block heater timers and heat tape system timers. Several stakeholders and trade allies indicated that heat tape systems represent a substantial energy savings opportunity. However, as a relatively untested DSM measure category, HCE should establish this incentive as a pilot offering and closely monitor its cost-effectiveness. Navigant recommends limiting first-year incentives to approximately 30 heat tape timer installations, with incentives conditioned on allowing HCE to evaluate the timers' effectiveness. HCE should also continue to offer rebates for programmable thermostats, but should specifically target the incentive to consumers with electric or forced-air space heating and/or cooling systems.	
Implementation Strategy	**Trade Ally Outreach and Retailer Partnerships**	HCE should hire a Trade Ally Outreach contractor to conduct targeted outreach and contractor training about the program, eligible equipment, and incentives. The contractor will also work with local retailers to help ensure availability of prescribed equipment, and raise trade allies' awareness of and willingness to offer these products to consumers. The contractor will develop partnerships with local retailers to arrange cooperative advertising promotions and offer point-of-sale marketing materials. This contractor will support similar efforts for the *Business Prescriptive Incentives Program.* This effort will require a 0.2-FTE allocation for an external contractor. [22]
	Administration	HCE staff will administer all other program tasks, including: » Hiring a Marketing and Communications Contractor to create program marketing materials » Providing oversight to Trade Ally Outreach Contractor » Creating rebate form, guidelines, and list of eligible equipment and available incentives (and post on website) » Processing rebate forms and payments » Maintaining program tracking and data management system » Handling consumer inquiries and complaint resolution The program will require a 0.10-FTE DSM budget allocation and a 0.15-FTE administrative budget allocation to conduct these program administration tasks. [22]

[22] FTE allocations designate "full-time equivalent" staffing estimates. An FTE of 1.0 indicates one person-year worth of full-time work; however, the duties comprising that work can be divided among multiple individuals. Per HCE budgeting convention, paperwork, scheduling, and other administrative work associated with DSM programs is allocated to a separate budget.

Key External Resources	» The Trade Ally Outreach Contractor's education and motivation of the local **trade ally network** of retailers and contractors will prove essential to the success of this program. These trade allies will ensure the availability of efficient products in the region and provide consumers useful information about energy-efficient options and available rebates when they purchase lighting, appliances, and other qualifying equipment. HCE should also collaborate with regional programs and entities to offer a comprehensive residential program to its consumers, including: » HCE's own ***Existing Homes Retrofit Program*** for consumer referrals » The **Governor's Energy Office** for rebates and education » ***Energy Smart Program***, the EECBG-funded energy efficiency program in Eagle and Pitkin counties, and the ***Garfield Clean Energy Program*** for outreach and referrals to the rebate program » **Regional clean energy advocacy groups,** including CLEER, Community Office for Resource Efficiency (CORE), and Eagle Valley Alliance for Sustainability (EVAS) for education and outreach.
Marketing and Communications	**Trade ally outreach** represents a significant portion of the recommended marketing and communication efforts for the *Efficient Products Program*, and will include the following activities: » Direct outreach to equipment retailers » Orientation meetings and training for local contractors » Email distribution of program materials » Follow-up phone calls » In-person visits by field representatives **Consumer-focused marketing and communications** for the *Residential Efficient Products Program* will rely on the following tactics: » Distribution of program information during *Existing Home Retrofit Program* and *Energy Smart Program* home energy assessments » Point-of-sale marketing materials at participating retailers » Cooperative advertising with local retailers (e.g., HCE pays 50 percent of the cost of advertising space) to notify consumers about special buy-down events » Direct mail (e.g., bill inserts) » Public relations efforts such as announcements and success stories in local newspapers and neighborhood newsletters » HCE website –All forms and detailed information will be available online.
Program Implementation Schedule	Recommended program implementation timelines appear in Section 8.2.

Budget		2012	2013	2014	2015	2016	Total
	Incentives	$26,175	$32,417	$49,171	$60,972	$64,021	$232,755
	Program Delivery	$22,660	$23,340	$24,040	$24,761	$25,504	$120,305
	Program Marketing	$11,500	$7,568	$32,718	$37,227	$38,684	$127,697
	Utility Administration	$27,830	$19,920	$20,270	$20,631	$21,002	$109,653
	EM&V	$3,833	$3,784	$4,674	$5,318	$5,526	$23,136
	Total	**$91,998**	**$87,028**	**$130,873**	**$148,909**	**$154,737**	**$613,546**
Energy and Peak Demand Savings		**2012**	**2013**	**2014**	**2015**	**2016**	**Cumula-tive[23]**
	Incremental Energy Savings (MWh)	543	586	820	1,017	1,068	4,035
	Incremental Peak Demand Savings (MW)	0.08	0.08	0.11	0.14	0.14	0.55
Cost-Effectiveness		**2012**	**2013**	**2014**	**2015**	**2016**	**Total**
	Total Resource Cost Test	2.0	2.3	2.2	2.4	2.3	2.3
	Utility Cost Test	2.7	3.1	2.9	3.2	3.1	3.0
	Participant Cost Test	6.5	6.4	6.4	6.4	6.4	6.4
	Rate Impact Measure	0.6	0.6	0.6	0.6	0.6	0.6

[23] Cumulative values refer to annual energy and demand savings planned by the end of 2016. Annual savings values represent incremental savings achieved each year.

Risk Factors	» Retail buy-down events run the risk of incentivizing purchases by non-HCE consumers. HCE can mitigate this risk by attempting to cost-share promotional events with municipal utilities (e.g., Aspen, Glenwood Springs). » HCE consumers who regularly shop at non-participating retailers (e.g., outside of HCE territory) may not be exposed to the incentives; advertising and/or a direct mail campaign advising consumers of the available rebates and directing them to the website for the rebate application form should help capture these purchases. » Rebate programs always have potential for some level of free ridership (i.e., consumers who would have purchased high efficiency equipment without the additional incentives, but take advantage of the rebates when presented with the opportunity). This topic can be addressed through EM&V and used to make adjustments to future incentive levels; for instance, if the EM&V team finds that specific measures have particularly high levels of free ridership, the incentive amount can be reduced and funds redistributed to other measures that consumers are less likely to purchase without an incentive.

7 Business Program Descriptions

This section provides specific program design elements that Navigant recommends for HCE's commercial and industrial consumer sector. Each program profile includes projected annual budgets, energy savings, and benefit-cost test results. As described in the Residential Programs Section, HCE should consider simple and approachable ways to brand each sector's programs as a comprehensive efficiency solution to its consumers.

7.1 Business Prescriptive Incentives Program

<table>
<tr><th colspan="3">Business Prescriptive Incentives Program</th></tr>
<tr><td>Objectives</td><td colspan="2">The Business Prescriptive Incentives Program seeks long-term energy savings for all business consumers through replacement of inefficient lighting and other assorted types of equipment with high-efficiency technologies that would not have otherwise been installed without the program.</td></tr>
<tr><td>Rationale</td><td colspan="2">Lighting, plug loads, and HVAC end-use equipment have the highest energy savings potential within HCE's C&I sector. The program will address the first-cost barrier to installing higher efficiency technologies by providing substantial financial incentives and educating consumers about the potential life-cycle savings through account representatives and trade allies. By offering C&I consumers access to incentives for specific, pre-qualified equipment measures, HCE can increase participation among businesses who do not wish to take the time to pursue a custom grant. With targeted outreach from HCE, the new incentives can also motivate local contractors to leverage the program in their dealings with business owners.</td></tr>
<tr><td rowspan="3">Target Market</td><td>Eligible Target Market</td><td>Prioritized Submarkets</td></tr>
<tr><td>All C&I consumers</td><td>Top 100 accounts:
» Hospitality and lodging
» Ski areas
» Grocery and large retail
» Municipal buildings (e.g., libraries, schools, and government)
» Hospitals and health care facilities
» Multi-family rental properties (e.g., employee housing)</td></tr>
<tr><td colspan="2">All C&I consumers are eligible for the program; however, to maximize the effectiveness of the marketing budget, HCE should focus direct marketing efforts on its top 100 accounts to achieve economies of scale. Navigant recommends HCE allocate a portion of a Key Account Representative's time (e.g., 0.15 FTE) to promoting this program to large C&I consumers.</td></tr>
<tr><td rowspan="2">Products and Services Provided</td><td colspan="2">Cash-Back Rebates for Energy-Efficient Equipment</td></tr>
<tr><td colspan="2">The program will provide businesses with cash-back rebates on a first-come, first-serve basis for energy-efficient equipment in the following categories:
» Lighting and controls (e.g., high-efficiency fluorescent lighting fixtures)
» HVAC auxiliary equipment (e.g., fans and pumps used to move air and water)
» ENERGY STAR refrigerators and vending machines</td></tr>
</table>

Products and Services Provided (cont'd)	**Account Representative Guidance**	
	The HCE account representative will be available to help C&I consumers understand the program and eligible equipment, identify energy savings opportunities, and find additional resources (e.g., qualified contractors).	
Implementation Strategy	**Trade Ally Outreach and Qualification**	HCE should hire a Trade Ally Outreach contractor to conduct outreach and training about the program, eligible equipment, and incentives with local trade allies (e.g., HVAC, lighting, mechanical, energy consulting). To avoid redundancies in implementation efforts, this contractor can also support such outreach for the *Residential Efficient Products Program*. The contractor will work with distributors to help ensure availability of prescribed equipment and to help raise awareness of the available rebates among trade allies. The contractor will also help pre-qualify a network of local contractors. Pre-qualification will be limited to verification of required licenses, insurance, and attendance at a training or orientation conducted by the Trade Ally Outreach contractor. The Trade Ally Outreach contractor's scope of work should also include a series of brief onsite visits to targeted participants to help market the program.[24] These visits will include the direct installation of up to five CFL light bulbs and the distribution of program marketing materials. These efforts will collectively require a 0.5-FTE allocation for an external contractor beginning in 2012.[25]
	Consumer Outreach	HCE should conduct periodic targeted outreach to specific geographies and/or business sectors, with particular attention paid to sectors' varying budget cycles (e.g., schools and governments are often on a different fiscal year than other sectors) as well as seasonal patterns of activity (e.g., hotels are unlikely to schedule retrofit projects that could impact consumers during high tourist seasons). This outreach will include the site visits and CFL direct installations mentioned above. HCE should also leverage the consumer outreach and marketing conducted for the *Large C&I Custom Incentives* program to increase awareness and direct consumers to the rebates and incentives available through the *Business Prescriptive Incentives Program*.

[24] Navigant assumed the Trade Ally Outreach contractor would complete 500 such site visits in 2012.

[25] FTE allocations designate "full-time equivalent" staffing estimates. An FTE of 1.0 indicates one person-year worth of full-time work; however, the duties comprising that work can be divided among multiple individuals. Per HCE budgeting convention, paperwork, scheduling, and other administrative work associated with DSM programs is allocated to a separate budget.

Implementation Strategy (cont'd)	**Administration**	HCE staff will administer all other program tasks, including: » Hiring a Marketing and Communications contractor to create program marketing materials » Providing oversight to Trade Ally Outreach contractor » Creating rebate form, guidelines, and list of eligible equipment and available incentives (and post online) » Processing rebate forms and payments » Maintaining program tracking and Data Management System » Handling consumer inquiries and complaint resolution » Conducting periodic post-installation site visits to verify equipment installation (HCE may determine an appropriate sampling methodology through subsequent EM&V planning.) The program will require a 0.40-FTE DSM budget allocation and a 0.30-FTE administrative budget allocation to conduct these program administration tasks.[26]
Key External Resources		» The Trade Ally Outreach Contractor's education and motivation of the local **trade ally network** of contractors, distributors, and retailers will be essential to the success of the *Business Prescriptive Incentives Program*. These trade allies will ensure the availability of efficient products in the region and will provide consumers useful information about energy-efficient options and available rebates when they purchase lighting, refrigeration, and other qualifying equipment. HCE should also collaborate with regional programs and entities to offer a comprehensive business program to its consumers, including: » HCE's own ***Large C&I Custom Incentives Program*** for consumer referrals » **Municipalities, business groups, and sustainability organizations** such as local business associations, Chambers of Commerce, CLEER, CORE, and EVAS for marketing program to constituents

[26] FTE allocations designate "full-time equivalent" staffing estimates. An FTE of 1.0 indicates one person-year worth of full-time work; however, the duties comprising that work can be divided among multiple individuals. Per HCE budgeting convention, paperwork, scheduling, and other administrative work associated with DSM programs is allocated to a separate budget.

Marketing and Communications	**Trade ally outreach** represents a significant portion of the marketing and communication efforts for the *Business Prescriptive Incentives Program*, including the following activities: » Direct outreach to equipment distributors » Orientations and training for local contractors » Distribution of program materials via mail and email » Follow-up phone calls **Consumer-focused marketing and communications** for the *Business Prescriptive Incentives Program* will rely on the following tactics: » Targeted bill inserts with telemarketing follow-up » Periodic in-person visits to business consumers to direct install CFLs, distribute program marketing materials, and help identify qualifying equipment opportunities » Public relations efforts such as announcements and success stories in local newspapers and business association newsletters » HCE website – All forms and detailed information will be available online.
Program Implementation Schedule	Recommended program implementation timelines appear in Section 8.2.

Budget

	2012	2013	2014	2015	2016	Total
Incentives	$187,948	$269,438	$275,912	$280,767	$296,633	$1,310,698
Program Delivery	$79,310	$81,689	$84,140	$86,664	$89,264	$421,068
Program Marketing	$48,513	$58,683	$60,126	$61,341	$64,223	$292,886
Utility Administration	$56,160	$40,090	$40,790	$41,511	$42,254	$220,805
EM&V	$16,171	$19,561	$20,042	$20,447	$21,408	$97,629
Total	**$388,101**	**$469,460**	**$481,010**	**$490,731**	**$513,782**	**$2,343,085**

Energy and Peak Demand Savings

	2012	2013	2014	2015	2016	Cumulative[27]
Incremental Energy Savings (MWh)	1,929	2,558	2,732	2,864	3,132	13,215
Incremental Peak Demand Savings (MW)	0.31	0.42	0.44	0.46	0.50	2.13

[27] Cumulative values refer to annual energy and demand savings planned by the end of 2016. Annual savings values represent incremental savings achieved each year.

		2012	2013	2014	2015	2016	Total
Cost-Effectiveness	Total Resource Cost Test	1.9	2.0	2.1	2.2	2.2	2.1
	Utility Cost Test	2.7	3.1	3.3	3.5	3.4	3.2
	Participant Cost Test	3.3	3.1	3.2	3.3	3.3	3.2
	Rate Impact Measure	0.8	0.8	0.8	0.8	0.8	0.8
Risk Factors	» The budgeted incentive pool may prove insufficient to meet consumer demand. If HCE has to curtail incentives, contractors may grow frustrated when they promote the program to consumers only to find out incentives are no longer available. HCE and its Trade Ally Outreach contractor should clearly position the incentives as available on a first-come, first-serve basis. HCE should closely monitor the incentive budget, and communicate directly with its trade ally network about the status of the rebates. HCE may also consider shifting incentive dollars from other programs if those dollars are unlikely to be spent in the program year. » Rebate programs always have potential for some level of free ridership (i.e., consumers who would have purchased high efficiency equipment without the additional incentives, but take advantage of the rebates when presented with the opportunity). HCE can address this issue through EM&V and make adjustments to future incentive levels; for instance, if the EM&V team finds that specific measures have particularly high levels of free ridership, the incentive amount can be reduced and funds redistributed to measures that consumers are less likely to purchase without an incentive.						

7.2 Large C&I Custom Incentives Program

<table>
<tr><th colspan="3">Large C&I Custom Incentives Program</th></tr>
<tr><td>Objectives</td><td colspan="2">The objective of the Large C&I Custom Incentives Program is to achieve long-term energy savings and demand reduction from large, energy-intensive consumers by providing financial incentives for technical services required to evaluate potential energy savings from complex projects and, more importantly, for the actual installation of energy-saving measures.</td></tr>
<tr><td>Rationale</td><td colspan="2">Much of the specialized equipment often in use at large, energy-intensive consumer sites (e.g., food service equipment, snowmaking equipment) may not be addressed by the Business Prescriptive Incentives Program. Large C&I consumers often require more time and resources upfront to determine what energy-saving measures will be feasible and cost-effective. HCE already has a program in place to support large C&I consumers in funding feasibility studies and custom efficiency projects, but this expanded program will increase incentive caps on individual consumers to take advantage of economies of scale in cost-effective energy savings. This program will leverage HCE's past marketing and outreach efforts with these consumers and enable consumers who have already completed energy audits and feasibility studies to take action on the recommended measures with the increased incentive amounts.</td></tr>
<tr><td rowspan="3">Target Market</td><td>Eligible Target Market</td><td>Prioritized Submarkets</td></tr>
<tr><td>All large C&I consumers[28]</td><td>Top 100 accounts:
» Hospitality and lodging
» Ski areas
» Grocery and large retail
» Municipal buildings (e.g., libraries, schools, government)
» Hospitals and health care
» Multi-family rental properties (e.g., employee housing)</td></tr>
<tr><td colspan="2">All large C&I consumers are eligible for the program; however, to maximize the effectiveness of the marketing budget, the program will focus its direct marketing on the top 100 accounts to achieve economies of scale.</td></tr>
<tr><td rowspan="2">Products and Services Provided</td><td colspan="2">Technical Assistance Grants</td></tr>
<tr><td colspan="2">HCE should continue to award grants to assist in covering the upfront costs of energy analysis and modeling, feasibility studies, and investment-grade audits often required before undergoing major efficiency retrofit projects at large sites. However, to reduce free ridership (i.e., consumers who never act on the study's findings) HCE should make reimbursement contingent upon a consumer's subsequent investment in energy savings measures following the study or audit. For example, if a consumer conducts an $8,000 feasibility study, HCE could reimburse $4,000 once the consumer invests at least an equal amount in subsequent energy efficiency retrofits. Alternatively, HCE could limit the amount of program funds allocated to such studies each year.</td></tr>
</table>

[28] Large C&I consumers are defined as those on rate schedules 63, 63s, 64, 66, 66s, 67, 67s, 68, and 69.

Products and Services Provided (cont'd)	**Energy Savings Incentives**	
	Participating businesses will receive financial incentives based on projected energy savings. The program establishes a maximum per-consumer aggregate incentive of $100,000 in a calendar year. In addition, HCE should consider a limit on the percentage of any individual project's total cost that can be covered by incentives (e.g., 50 percent). Incentives will be available on a first-come, first-served basis, with applications received on a rolling basis and a wait list for applications received after funding for a given cycle has been exhausted.	
Implementation Strategy	**Standard Program Application Form**	HCE should design a standard program application form and guidelines for calculating estimated energy savings and payback periods to facilitate evaluation of proposed projects' cost-effectiveness. HCE may consider retaining outside engineering contractors to help verify estimated energy savings from more complicated projects or equipment.
	Consumer Outreach	An HCE account representative will work with large C&I consumers to help them understand the program and incentives, identify eligible energy savings opportunities, and find additional resources (e.g., energy consultants and energy service companies who can assist in detailed studies). HCE staff should identify target consumers, key influencers, and decision-makers (e.g., school boards) and conduct outreach to trade allies. Consumer outreach will occur in coordination with the *Business Prescriptive Rebates Program.*
	Trade Ally Outreach	HCE should leverage the Trade Ally Outreach Contractor hired to promote the *Business Prescriptive Incentives Program* to include information about the *Large C&I Consumer Program* in outreach to local trade allies (e.g., HVAC, lighting, mechanical, energy consulting contractors).

Implementation Strategy (cont'd)	**Funding Limits**	Due to limited funding, the program will place constraints on the incentives to provide for the effective and equitable use of funds. The current annual per-consumer funding limit (20 percent of prior year's billing up to $10,000) may discourage participation by some larger consumers and limit the size of projects pursued through the program. This may prevent the program from capturing the most cost-effective energy savings potential in the region. For simplicity in program design, Navigant recommends HCE employ an across-the-board $100,000 maximum annual limit on incentives awarded to any HCE consumer-member having one or more electric accounts. Incentives received under the Business Prescriptive Incentives Program will count toward the annual funding limit. While the maximum annual funding limit should be increased, a limit on the percentage of total project cost that can be covered by incentives (currently 50 percent) should be maintained. Projects with payback periods of less than one year will not be eligible for Large C&I custom incentives, as they are cost-effective enough that large C&I consumers should be able to fund them without program assistance.
	Time Limits	Consumers awarded a grant reservation must commit to their proposed project within 30 days of award and complete the project within 90 to 120 days of signing the grant reservation. This will help prevent consumers from tying up limited funding reservations for projects that they may not implement in the near-term. HCE may grant exceptions to the time limit (e.g., due to exceptionally complex projects) on a case-by-case basis.
	Third-Party Verification	HCE should not release incentives until either HCE or a third-party EM&V contractor has verified equipment installation.

	Administration	HCE staff will administer all other program tasks, including: » Allocating a portion of a Key Account Representative's time to conducting outreach to key targeted consumers » Designing standard program application form and energy savings calculation guidelines » Evaluating applications » Overseeing pre- and post-installation project inspections » Administering incentive payments The program will require a 0.80-FTE DSM budget allocation and a 0.15-FTE administrative budget allocation to conduct these program administration tasks. As currently modeled, the DSM budget allocation would increase to 1.30 FTEs in 2013-2016 to address increased participation levels. HCE may consider hiring additional internal staff or an outside contractor to provide this additional support.[29]
Key External Resources	The **trade ally network** of performance contracting firms and HVAC/lighting consultants will be essential to the success of the *Large C&I Custom Incentives Program*. These trade allies will help to drive grant applications for the program and ensure that consumers are aware of HCE's incentive opportunities. The program will also collaborate with several regional programs and entities to offer a comprehensive business program to its consumers, including: » HCE's own **Business *Prescriptive Incentives Program*** for consumer referrals » **Governor's Energy Office** for assistance related to performance contracting at state, county, municipality, and school district facilities	
Marketing and Communications	**Trade ally outreach** for the *Large C&I Custom Incentive Program* will leverage related outreach efforts from the *Business Prescriptive Rebates Program*. HCE should have its Trade Ally Outreach Contractor include information about the custom program and its funding limits in outreach and orientations with local contractors. **Consumer-focused marketing and communications** for the *Large C&I Custom Incentives Program* will rely on the following tactics: » In-person visits to large business consumers (top 100 accounts) to promote the program, help identify qualifying equipment opportunities, and refer consumers to additional resources (e.g., energy consultants or energy service companies) » Announcements to municipalities, large real estate companies, ski resorts, etc. » Public relations efforts such as announcements and success stories in local newspapers and business association newsletters. » HCE website – All forms and detailed information will be available online.	

[29] FTE allocations designate "full-time equivalent" staffing estimates. An FTE of 1.0 indicates one person-year worth of full-time work; however, the duties comprising that work can be divided among multiple individuals. Per HCE budgeting convention, paperwork, scheduling, and other administrative work associated with DSM programs is allocated to a separate budget.

Program Implementation Schedule	Recommended program implementation timelines appear in Section 8.2.						
Budget[30]		**2012**	**2013**	**2014**	**2015**	**2016**	**Total**
	Incentives	$84,407	$126,611	$168,393	$168,393	$168,393	$716,197
	Program Delivery	$67,980	$128,369	$132,220	$136,187	$140,272	$605,028
	Program Marketing	$31,282	$44,260	$51,210	$51,914	$52,638	$231,304
	Utility Administration	$56,160	$40,090	$40,790	$41,511	$42,254	$220,805
	EM&V	$10,427	$14,753	$17,070	$17,305	$17,546	$77,101
	Total	**$250,257**	**$354,084**	**$409,683**	**$415,309**	**$421,103**	**$1,850,435**
Energy and Peak Demand Savings		**2012**	**2013**	**2014**	**2015**	**2016**	**Cumulative**[31]
	Incremental Energy Savings (MWh)	885	1,328	1,766	1,766	1,766	7,511
	Incremental Peak Demand Savings (MW)	0.11	0.17	0.22	0.22	0.22	0.96
Cost-Effectiveness		**2012**	**2013**	**2014**	**2015**	**2016**	**Total**
	Total Resource Cost Test	1.2	1.3	1.4	1.4	1.4	1.3
	Utility Cost Test	1.6	1.7	2.0	2.0	1.9	1.9
	Participant Cost Test	3.0	3.0	3.0	3.0	3.0	3.0
	Rate Impact Measure	0.6	0.6	0.7	0.7	0.6	0.6
Risk Factors	» Individual consumer award caps may prevent some cost-effective projects from occurring. HCE must weigh this against the need to make funding available to more than a handful of consumers willing to undertake very large projects.						

[30] At HCE's request, Navigant modeled the commercial programs to include a contingency budget each year (see Table 5-C). Particularly in 2012, this contingency will allow HCE flexibility to shift resources as programs ramp up and participation trends evolve. In the DSM Portfolio Planning Model, this contingency largely results from HCE using a low (but reasonable) assumption for the per-project energy savings provided by the *Large C&I Custom Grants Program*. With targeted marketing of this program to large C&I consumers with the highest electricity usage, Navigant anticipates per-project savings will be substantially higher. This would consume contingency funds through increased incentives and program administration costs and would subsequently close the savings gap.

[31] Cumulative values refer to annual energy and demand savings planned by the end of 2016. Annual savings values represent incremental savings achieved each year.

8 Implementation Considerations

This section presents Navigant's recommendations regarding HCE's use of in-house staff and external contractor resources, as well as a proposed high-level timeline, to implement its portfolio of DSM programs.

8.1 Implementation Planning

Navigant recommends that HCE implement the proposed portfolio through a combination of in-house utility staff and third-party implementation contractors. HCE should issue up to three separate Requests for Proposals (RFPs) to qualified firms, each covering one of the work areas described in Table 8-A. Based on its knowledge of potentially qualified contractors, HCE may also consider bundling some of these work areas into a single RFP (e.g., combining #2 and #3). This approach would enable HCE to obtain more competitive, cost-effective, and qualified responses. It will also encourage proposing firms to form partnerships that can provide HCE an integrated team approach that will simplify collaboration and reduce HCE's administrative costs.

Table 8-A. Recommended Implementation Contractor RFP Components

RFP Component	Work Areas	Scope of Work
#1	Data Management System	Design and implement a DSM program tracking and data management system
#2	Trade Ally Outreach	Conduct contractor orientations and pre-qualification; coordinate with distributors and retailers to ensure availability of incentivized equipment; arrange promotions and cooperative advertising
#3	Marketing Communications	Design and prepare DSM program marketing materials

Source: Navigant 2011

Navigant considers these three components as necessary steps to take in advance of the rollout of any changes in HCE's current DSM program offerings. Navigant anticipates that—even with an aggressive approach—it will take three to four months for HCE to prepare the RFPs, evaluate and select contractors, and for all requisite work to be completed prior to programs launching. In order to position the new program offerings as a comprehensive approach and to maximize awareness generated, HCE should aim to launch each sector's programs simultaneously.

In addition, Navigant recommends that HCE hire an additional full-time employee whose time can be partially allocated to the significant expansion of the commercial DSM programs. Targeted participation levels in the *Business Prescriptive Incentives* and *Large C&I Custom Programs* will rely on HCE having a dedicated account representative to market programs to members on an ongoing basis. This individual's responsibilities will benefit other parts of utility operations as the individual builds strong relationships with HCE's largest consumers.

8.2 *Portfolio Implementation Timeline*

Suggested implementation schedules for each sector are shown in Figure 8-A (Residential Programs) and Figure 8-B (C&I Programs).

Figure 8-A. Implementation Timeline for Residential Programs

Program Implementation Activities	2012				2013				2014				2015				2016			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Existing Home Retrofit																				
Create rebate form, guidelines, and list of eligible equipment and available incentives.																				
Train and certify HCE assessment staff to use home energy assessment tool.																				
Create standardized contractor bidding form to help customers solicit quotes for retrofits.																				
Pre-qualify contractors to include on retrofit contractor list. (ongoing)																				
Launch enhanced Existing Home Retrofit Program (simultaneous with Efficient Products Program)		X																		
Conduct assessments, handle customer relations, track program and maintain Data Management System.																				
Hire additional employee to provide 0.5-FTE allocation to performing additional audits.																				
Efficient Products Program																				
Finalize list of prescribed equipment and incentive levels.																				
Create rebate form, guidelines, and list of eligible equipment and available incentives.																				
Hire Trade Ally Outreach Contractor; conduct trainings and outreach, confirm product availability.																				
Prepare point-of-sale marketing materials.																				
Launch Efficient Products Program		X																		
Continue retailer outreach; conduct promotional buy-down events; restock point-of-sale materials.																				
Process rebates, handle customer relations, track program and maintain Data Management System.																				
Portfolio Implementation																				
Hire Data Management System Contractor; design and implement data management system.																				
Hire Marketing Communications Contractor; design and produce program marketing materials.																				
Hire EM&V Contractor; conduct EM&V activities.																				

Source: Navigant 2011

Figure 8-B. Implementation Timeline for C&I Programs

Program Implementation Activities	2012				2013				2014				2015				2016			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Business Prescriptive Incentives																				
Finalize list of prescribed equipment and incentive levels.																				
Create rebate form, guidelines, and list of eligible equipment and available incentives.																				
Prepare marketing materials.																				
Hire Trade Ally Outreach Contractor; conduct trainings, outreach, and contractor prequalification.																				
Launch *Business Prescriptive Incentives Program.*		X																		
Process rebates, handle customer relations, track program and maintain Data Management System.																				
Verify installation of equipment; handle customer relations. (ongoing)																				
Large C&I Custom																				
Prepare standard application form, program guidelines, and list of prescriptive incentives.																				
Open first funding cycle to applications.		X																		
Conduct outreach to target customers.																				
Evaluate applications and award incentive reservations. (ongoing)																				
Verify and evaluate energy savings and final installation. (ongoing)																				
Evaluate budgets and release additional funds. (ongoing)																				
Portfolio Implementation																				
Hire Data Management System Contractor; design and implement data management system.																				
Hire Marketing Communications Contractor; design and produce program marketing materials.																				
Hire EM&V Contractor; conduct EM&V activities.																				

Source: Navigant 2011

9 Portfolio Management Considerations

HCE will serve as the overall program administrator for delivery of the DSM Portfolio outlined in this plan. In order to allocate its resources efficiently and effectively, HCE should also hire key implementation contractors to perform various program activities areas as outlined in Section 8. Contractors will be selected through a competitive RFP process. HCE will need to provide high-level administrative, contract management, and marketing oversight of the selected implementation contractors.

One of the recommended implementation contractor work areas requires the development of a comprehensive Data Management System that will help ensure accurate and comprehensive recording of all program participation. Additionally, the database will allow HCE to research and track participation by consumer class and other geographic or demographic area, to identify trends and untapped opportunities to advance program goals.

HCE staff will take primary responsibility for general energy efficiency education and awareness strategies and activities, including the website, general education, and efficiency awareness promotions.

In summary, HCE will provide comprehensive program contract oversight, including management, financial planning and budgeting, as well as the following:

- High-level guidance and direction to implementation contractors
- Review and approval of implementation contractor invoices, ensuring program activities are within budget and on schedule
- Incorporation of data into HCE's Data Management System
- Oversight and coordination of evaluation, measurement, and verification contractors
- Public education and outreach to community groups and other stakeholders
- Review and approve printed materials and advertising plans
- Evaluate portfolio and program effectiveness and consider recommended modifications to programs and approach as needed
- Perform periodic review of program metrics, conduct investment analysis, and review evolving program design

9.1 Marketing and Outreach Strategy

The marketing and outreach strategy for HCE's portfolio is to make consumers—as well as trade allies and other key market actors—aware of HCE's program offerings and their benefits and to influence consumers who are purchasing and installing new energy systems or equipment to choose more energy-efficient models. The marketing and outreach strategy will leverage its limited budget by seeking opportunities for cost-sharing marketing expenses with other regional players, such as partnering with local municipal utilities to sponsor lighting equipment buy-down events at local retailers and splitting the cost of cooperative advertising with the participating retailers and other trade allies. As discussed elsewhere in this plan, HCE should also leverage efforts of the local *Energy Smart Program* for its residential sector programs.

The specifics of the marketing strategy are dependent on the program and the characteristics of each target market being engaged. Generally, it includes a mix of direct mail, bill inserts, earned media (e.g., success stories highlighted in the local newspapers), and direct outreach (i.e., telephone calls and in-person visits). Table 9-A summarizes marketing and outreach tactics recommended for each program.

Table 9-A. Marketing and Outreach Tactics by Program

Program	Direct Mail, Bill Inserts	Cooperative Advertising with Trade Allies, Other Programs	Direct Outreach	News Stories in Local Newspapers, Trade Publications
Existing Home Retrofits	X	X		X
Residential Efficient Products	X	X		X
Business Prescriptive Incentives	X	X	Telephone calls, in-person site visits	X
Large C&I Custom Incentives	X		Telephone calls, in-person site visits	X

Source: Navigant 2011

9.2 Tracking and Reporting

Navigant recommends that HCE contract to build a comprehensive Data Management System that will enable internal tracking and reporting of all DSM program activities and cross-referencing to HCE consumer billing data. The system will allow customized analysis, including targeted marketing and evaluation activities, in a quick, transparent, and accurate manner.

9.3 Midstream Adjustments

A DSM portfolio that seeks to serve a wide variety of consumers on a limited budget must maintain flexibility to make midstream adjustments to program strategies, budgets, and target markets. As part of ongoing EM&V activities, HCE should continuously monitor each program's participation levels and spending to ensure that the programs remain responsive to changing market conditions and consumer demand and that they achieve expected cost-effective energy savings. Periodic adjustments to program budget allocations, incentive levels, eligible measures, and per-consumer incentive limits may be warranted as the portfolio matures and HCE learns more about the needs and preferences of its consumers.

9.4 Leveraging Other Efficiency Initiatives

HCE has several unique opportunities to collaborate with other organizations and initiatives that are pursuing efficiency-related activities within its service territory. The following summarizes these organizations and opportunities:

» **Energy Smart Program.** The EECBG-funded Energy Smart Program is pursuing an ambitious campaign to increase energy efficiency awareness and energy savings activities in Eagle, Pitkin, and Gunnison Counties. This program includes a well-designed, creative, and substantial effort to convert home energy assessments into measurable energy savings measures. HCE has directed that the Final Plan set aside $50,000 annually from its residential DSM programs budget in 2012

and 2013 to support this program. In addition, HCE should seek other opportunities to leverage marketing and data-sharing opportunities with the Energy Smart Program.

» **Local Environmental and Energy Efficiency Nonprofit Organizations.** HCE is well acquainted with the local environmental, energy efficiency, and sustainability community, including EVAS, CORE, and CLEER. HCE should continue to work with these organizations to promote its programs and incentives to the general public through their various websites, public events, the Energy Smart Program, and Garfield Clean Energy.

» **Colorado Governor's Energy Office (GEO).** The GEO continues to play a leading role in sponsoring and moving energy efficiency programs forward across the state. In particular, GEO's Recharge Colorado website (www.rechargecolorado.com) contains a wealth of educational resources and information that HCE can leverage in its own materials to avoid "reinventing the wheel." Alternatively, HCE might consider providing direct hyperlinks to some of the program pages on the Recharge Colorado website to help educate its consumers about energy savings and incentive opportunities. The GEO also provides a wealth of energy efficiency and renewable energy rebates; however, most are only available on a first-come, first-serve basis.

» **Northwest Colorado Council of Governments.** The NWCCOG implements a low-income weatherization program for the GEO across a large part of northwestern Colorado, including the five counties in HCE's service territory. NWCCOG currently uses a co-financing model with Xcel Energy to deliver additional incentives to the utility's low-income consumers when they participate in a NWCCOG weatherization. The program allows Xcel to leverage NWCCOG's expertise and resources to deliver these vital energy savings services to its consumers. As with the *Energy Smart Program*, HCE has directed that the Final Plan set aside $50,000 annually from its residential DSM programs budget in 2012 and 2013 to support this program.

9.5 Trade Ally Coordination

The trade ally network of local wholesalers, distributors, retailers, and contractors will be essential to the success of HCE's DSM programs. These trade allies can help ensure that efficient products are readily available in the region and that consumers are given useful information about energy-efficient options and incentives when they are purchasing equipment for their homes and businesses. In an effort to motivate participation, HCE's Trade Ally Outreach Contractor will offer program orientations and outreach to local contractors to educate them about the new programs and highlight the enhanced incentives they can leverage to help generate new business. These orientations will be part of a basic contractor prequalification process that will provide HCE consumers with a list of vendors who are familiar with HCE's programs, eligibility requirements, and incentives.

The Trade Ally Outreach Contractor will also work with local distributors and retailers to help ensure availability of equipment eligible for incentives under the *Residential Efficient Products* and *Business Prescriptive Incentive Programs*. The Contractor will also work to establish retail partnerships for periodic equipment buy-down promotions, ENERGY STAR point-of-sale marketing materials, and cooperative advertising opportunities that will increase program participation while driving traffic to local stores.

10 Evaluation, Measurement and Verification (EM&V)

Program EM&V activities will be central to the success of HCE's portfolio and will be used to monitor program performance. These activities serve as a way to determine the actual level of program savings delivered and to maximize energy efficiency investments. Effective EM&V leads to the following four benefits.

- Expected results are measurable.
- Achieved results are robust and defensible.
- Program delivery is effective in maximizing participation.
- The overall portfolio is cost-effective.

10.1 Definition of Evaluation, Monitoring, and Verification

Evaluation encompasses process, impact, and market evaluation activities as defined below.

- **Impact evaluations** estimate the energy and demand savings produced by a program. These evaluations validate program-reported savings by verifying the type, quantity, and efficiency of measures installed, examining the measures replaced by the program for retrofit applications, or estimating the normal or standard baseline equipment for new construction applications. Impact evaluations calculate energy savings in one of two ways: (1) gross savings, which is defined as the total amount of savings achieved by the projects that received funding through the program or (2) net savings, which adjust program-reported savings to account for measures that would have been installed even if the program had not existed (defined as free ridership) and for measures that were inspired by the program but not captured by the tracking system (typically called spillover). These evaluations can use data from a variety of sources: program tracking databases, interviews with participants, on-site inspection and monitoring, and occasionally, secondary sources, such as program evaluations done for similar programs. Methods for impact evaluations include engineering calculations, simulation modeling calibrated to site billing data, and statistical/regression analysis of energy use data.

- **Process evaluations** are directed at addressing whether the programs were implemented as designed, examining perceived market barriers and opportunities, measuring participant satisfaction, documenting the program process, and exploring opportunities for efficiency improvements. Process evaluations are generally performed by using a combination of interviews with program managers, implementation contractors, trade allies, participants, program drop-outs, and non-participants. They often include a detailed review of program documents, application forms, and policies and procedures, including record keeping and data collection. Sometimes, they include surveys with non-participants to examine program awareness and market barriers to participation. Process evaluations often document each significant component of the programs, including program accomplishments, administrative processes, participant experiences, consumer satisfaction, and successes and failures.

- **Market evaluations** examine program and market assessment "indicators" developed for each program and assess how these indicators change over time. The indicators are typically derived from a program logic formulation developed during program design and early implementation. The program logic model is a simple representation of the program and the underlying hypotheses that are expected to account for the program's success in the market. Typically,

program logic models are organized around the program inputs, processes, and outputs. From this formulation, a set of key market indicators that can be tracked over time is developed (and modified over time, as needed). These indicators are designed to measure the progress of a program across specified time periods in terms of affecting key touch points in the market. This might include the change over time in the number of qualified contractors. The indicators are designed to reflect significant changes in how the market operates, the information absorbed and used by the market, choices key market actors make on a routine basis, and the attitudes and beliefs of key market actors. Data to support market evaluations are typically gathered through surveys with trade allies, manufacturers, participants, and nonparticipants, as well as from secondary sources, such as national databases.

Monitoring includes developing a program data tracking system to support the evaluation effort (i.e., monitoring of results and verifying the installation and retention of measures and equipment promoted by the DSM program where appropriate).

Verification includes a review, audit, and verification of claimed program savings and recommendations for improvement. Verification can take place at the project level, at the program level, or at the portfolio level.

10.2 Framework for Evaluation

Appropriate EM&V requires both planned EM&V efforts and data collection as part of program implementation. This section provides an overview of the monitoring, verification, and evaluation efforts recommended to support appropriate EM&V. Importantly, EM&V efforts evolve over time and change as programs move from initial roll-out with few participants to full-scale implementation.

All evaluation activities should be conducted by third-party evaluation consultants selected through a competitive bid process. This approach ensures the program evaluation effort is fair and objective. Impact evaluations are most often performed by organizations independent of those responsible for designing and implementing programs to ensure objectivity. Process evaluations and market effects studies typically are also prepared by independent evaluators, but process evaluations in particular are used less to verify performance than to help improve performance and, as such, require active participation by the program administrator/implementer.

10.3 Approach to Evaluation

The overall evaluation approach is based on an *integrated cross-disciplinary model* that includes evaluators as members of "project teams" involved in the various stages of program planning, design, monitoring, and evaluation. This is a very cost-effective method that has been very successful for other utilities.

Timing of EM&V activities and reporting can have a significant effect on the accuracy and usefulness of findings. Data collection done months or years after a program intervention can be weakened by fading memories, lost data, and confounding events that have happened in the intervening time. EM&V reports that come well after program intervention can arrive too late to provide input at key program implementation stages.

EM&V plans are designed to mitigate these problems. EM&V plans integrate select data collection within the program implementation process and provide near real-time feedback on key indicators of program progress. EM&V processes that take an "integrated data collection" approach to planning seek out opportunities in the program implementation process where evaluation data can be collected efficiently,

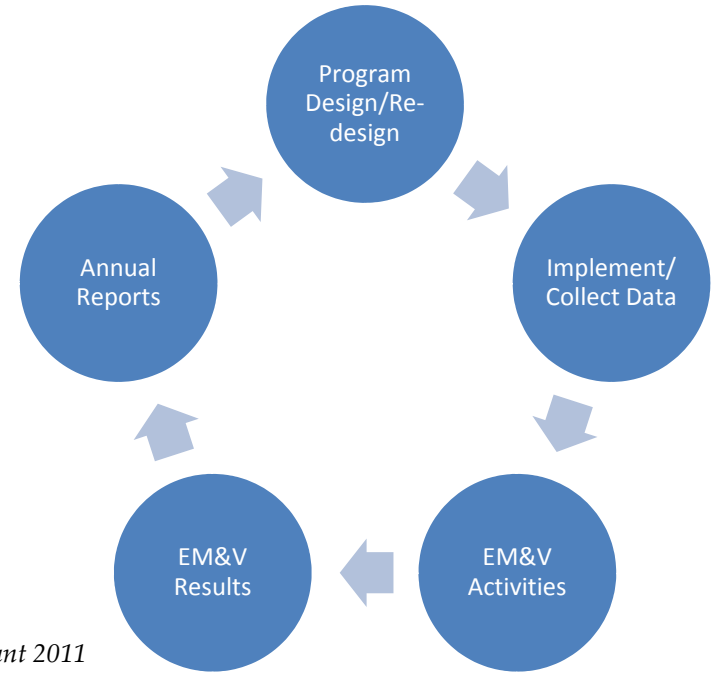
cost-effectively, accurately, and produce timely results. Examples of interactions with consumers during which important data can be collected include the following:

- » Program application forms
- » Initial consumer contact (questions on where the consumer heard about the program)
- » During implementation (where data on the equipment baseline can be collected)
- » Payment of incentives (Questions on what measures were installed due to the program may best be collected at this time.)

Of course, this approach will depend on the program design and the points where the program interacts with the consumer or trade ally.

EM&V and implementation staff must work closely together to develop a protocol for collecting data as part of the standard program implementation practices and consumer correspondence associated with the program. It is also important for the program implementation staff to see successful M&V as part of their responsibility. Implementation staff have a dramatic effect on the ease with which M&V activities are completed. As the program receives credit for the savings that can be verified, program implementers whose incentives are aligned with savings delivery are often motivated to provide better documentation.

Figure 10-A. Steps of the EM&V Process



Source: Navigant 2011

Approximately 4 percent of overall portfolio program costs will be allocated to the following activities, which are further described in the following sections.

- » EM&V-related activities
- » Project savings verification and due diligence
- » Provide independent program evaluations
- » Independent assessment of annual program impacts
- » Provide internal quality assurance and control
- » Coordinate evaluation activities with other players

10.3.1 Project Savings Verification and Due Diligence

HCE should work with implementation contractors to develop and implement quality assurance/quality control, inspection, and due diligence procedures for those programs for which deemed savings are not appropriate. These procedures will vary by program and are necessary to assure consumer eligibility, completion of installations, and the reasonableness and accuracy of savings. The activities that Holy Cross Energy will undertake in performing EM&V procedures may include, but are not limited to, the following:

- Review custom rebate applications and project proposals for eligibility and completeness
- Inspect and verify a statistically valid sample of installations for purposes of ensuring compliance with program requirements
- Prepare and facilitate EM&V plans where needed based on the project, and assure adherence to appropriate protocols (e.g., International Performance Measurement and Verification Protocol)

10.3.2 Independent Program Evaluations

Navigant recommends that HCE focus its evaluation resources on impact evaluation. This approach will enable HCE to validate program assumptions about measure savings and cost-effectiveness. It also enables HCE and its implementation partners to assess the need to adjust rebates. These inputs can help HCE adjust its savings targets or cost-effectiveness screens. In addition, the impact evaluations validate the work of implementation contractors whose compensation may be partially based on the achievement of energy savings. These efforts to ensure appropriate use of member funds should be prioritized.

Process and market studies also provide useful information for program implementers and may be considered if the portfolio fails to meet its energy savings targets. The information about the priorities and decision-making processes for the target market that market studies provide can help re-direct marketing efforts or incentive levels. Process evaluations can identify any processes or strategies that the program uses that may create high barriers to participation. Both of these types of information can inform adjustments to implementation plans as needed.

HCE should work with an evaluation contractor to develop appropriate M&V plans.

The key characteristics of the impact evaluation include the following:

- Evaluations conducted by an independent, DSM evaluation consultant obtained through an RFP process
- Review of the program database that captures measure and/or project data, develops initial estimates of savings, and retains participant information to assist with subsequent EM&V activities
- Verification, by an appropriate sample, that efficiency measures are installed as expected
- In-field measure performance measurement and data collection
- Energy and demand savings analysis to compute the results that are being achieved
- Cost-effectiveness analysis by program and overall DSM portfolio
- Identification of important opportunities for improvement

Given the budget levels available for evaluation, HCE should carefully consider the prioritization of measures and the balance between on-site data collection and engineering analysis.

10.3.3 Coordination of Evaluation Activities with Other Players

Wherever it is practical and appropriate, HCE's evaluation contractor should coordinate with other utilities and agencies in the region to leverage funding and help ensure consistency. Given the diversity of programs that promote energy efficiency in HCE's service territory, this approach will also avoid double-counting energy savings. Pooling resources where feasible will also enable a more comprehensive assessment of the state of energy efficiency in HCE's service territory. To the extent that these combined efforts yield economies of scale, it may also free up resources to conduct a market and/or process assessment.

11 Other DSM Programs Considered

Over the course of the data analysis and market characterization activities conducted for this planning process, Navigant considered several types of DSM programs that are not recommended in this plan. While some of these programs did not present cost-effective opportunities for HCE, others were not included as a matter of prioritizing HCE's limited budget so as to not "spread itself too thin." This section offers a brief summary of a few of these programs that were specifically discussed among Navigant, HCE, and its stakeholders over the course of this plan's development.

11.1 Demand Response

Navigant analyzed HCE system hourly load shape data from 2007-2009. This included data from two sub-meters representing relative residential and commercial hourly load shapes, as well as from meters providing absolute hourly load shapes for Vail Resorts' and Aspen Skiing Company's on-mountain operations (2009 only). Based on this analysis, Navigant recommends HCE *not* pursue any substantial demand response efforts beyond those currently employed for the following reasons:

- Overall, HCE demonstrates a relatively flat load shape that presents limited opportunity to shave peak demand, especially during the summer months. During its high-demand winter months, HCE's system load actually reveals two separate peaks—one in late morning (~11:00) and another in early evening (~18:00)—that are of fairly similar magnitude. This means that any effort to reduce the larger peak will only lead to demand savings insofar as it exceeds the other peak.

- HCE pays monthly wholesale demand charges based on its peak system load in each particular month, not on its peak for the entire year. This arrangement further limits the potential benefits of demand response, as any peak demand savings would only accrue to the month in which they were realized (rather than across all 12 months).

- HCE's primary curtailable loads comprise on-mountain ski area operations that generally do not coincide with HCE's early evening peak.

Demand response can serve numerous purposes for utilities; however, several of the more common motivations for pursuing demand response do not apply to HCE's situation. Generally speaking, this arises from the fact that HCE does not own the majority of its power generation resources. For such utilities, demand response presents a key method of ensuring system reliability by curtailing loads when system demand threatens to surpass available supply. In addition, by relying on wholesale power purchases, HCE is unable to directly attribute its demand response activities to the avoided new construction of peaking plants that tend to rely on natural gas.

11.2 School Education Programs

For the past two decades, HCE has supported *LivingWise*, a school-based energy conservation and efficiency education program directed at fifth-grade students. Navigant acknowledges the importance of such outreach activities, and recommends HCE continue to offer the program as its budget allows; although the program was not modeled in Navigant's DSM Portfolio Planning Tool.

Appendix A: Benefit-Cost Methodology

Navigant conducted benefit-cost analysis of HCE's DSM portfolio using its Excel-based DSM Portfolio Planning Model and the energy savings and cost values from HCE's 2010 DSM potential study. The tool uses inputs at the individual measure level (electric savings, incremental cost, participation levels, avoided costs, and energy costs) to calculate measure-level savings and cost-effectiveness. The savings at the measure level are subtotaled for each program, sector, and for portfolio as a whole. At the program and sector level the model also calculates program-level cost-effectiveness, program incentive and non-incentive costs, total program costs, and cost of conserved energy. The outputs are compared against target savings goals, spending caps, and cost-effectiveness limits.

Discount Rate. There is a time value of money because money spent in the future does not have the same value as money spent today. This time value is represented by a discount rate (analogous to an interest rate). Economic equations use the discount rate to convert all costs and benefits to a "present value" for comparing alternative costs and benefits. Navigant used a uniform discount rate of seven percent for HCE's energy efficiency programs.

Avoided Energy Costs. DSM avoided cost benefits fall into two categories, avoided capacity benefits, and avoided energy costs. For most utilities, avoided capacity benefits derive from deferring the need to build new generating plants in the future. However, HCE addresses marginal demand through a wholesale contract with Public Service Company of Colorado (Xcel Energy). Therefore, Navigant based avoided capacity values on HCE's expected monthly wholesale demand charges for 2011 and 2012, using an annual three percent escalation rate for subsequent years.

Avoided Transmission and Distribution. The transmission and distribution system line losses can be avoided when consumers save energy. Losses are incurred from electrical resistance in lines and from transformation of voltage from high voltage to the voltage level used by the consumer. Navigant based line loss values on the 4.65 percent value provided by HCE. While the cost of building transmission and distribution systems—by either building with less capacity or avoiding building completely—theoretically might be avoided, HCE's current transmission and distribution systems are typically adequate to meet consumers' needs. The current situation, relative to numbers of consumers and demand, would need to substantially change before costs of building transmission and distribution systems could be avoided.

Administration, Implementation, and Direct Costs. Administration, implementation, and marketing costs were included as inputs into the benefit-cost screening tool to allow aggregation into total program cost-effectiveness.